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VALLEY SEDIMENTS AS EVIDENCE OF PREHISTORIC LAND-USE : A STUDY BASED ON DRY VALLEYS IN SOUTH EAST ENGLAND

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CHAPTER 6

INVESTIGATIONS IN THE CHALTON AREA, HAMPSHIRE.

(a) Geology and Geomorphology (Fig.50).

Chalton parish was a most suitable area for investigation because many years of intensive fieldwork by the farmer, Mr. John Budden, and Professor Barry Cunliffe have made this archaeologically the best known area of the South Downs. An additional factor was that a certain amount of work, of a geomorphological nature, had already been carried out on dry valleys around neighbouring Butser Hill. Furthermore there was the proximity of the Butser Experimental Ancient Farm which offered the longer term prospect of cross fertilisation between the valley study and experimental work.

The area lies close to the extreme western end of the South Downs. The escarpment hereabouts is dominated by Butser Hill which rises to 273m. O.D. We are concerned with the dip slope just south of Butser Hill where the most obvious geomorphological features are two dry valleys. The westerly one of these, which we shall call Bascomb, originates on the south slopes of Butser itself in an impressive group of short, first order dry valleys which splay out from the head of the main valley like the fingers of a hand. The easterly valley, Idsworth valley, has a similarly impressive group of valleys at its head just to the east of Butser. Both valleys run in a roughly southerly direction and are joined only by relatively minor dry valleys. Between the two main valleys is Church Down, south of which they converge and run as a single broad valley down to the Coastal Plain in the Havant area.

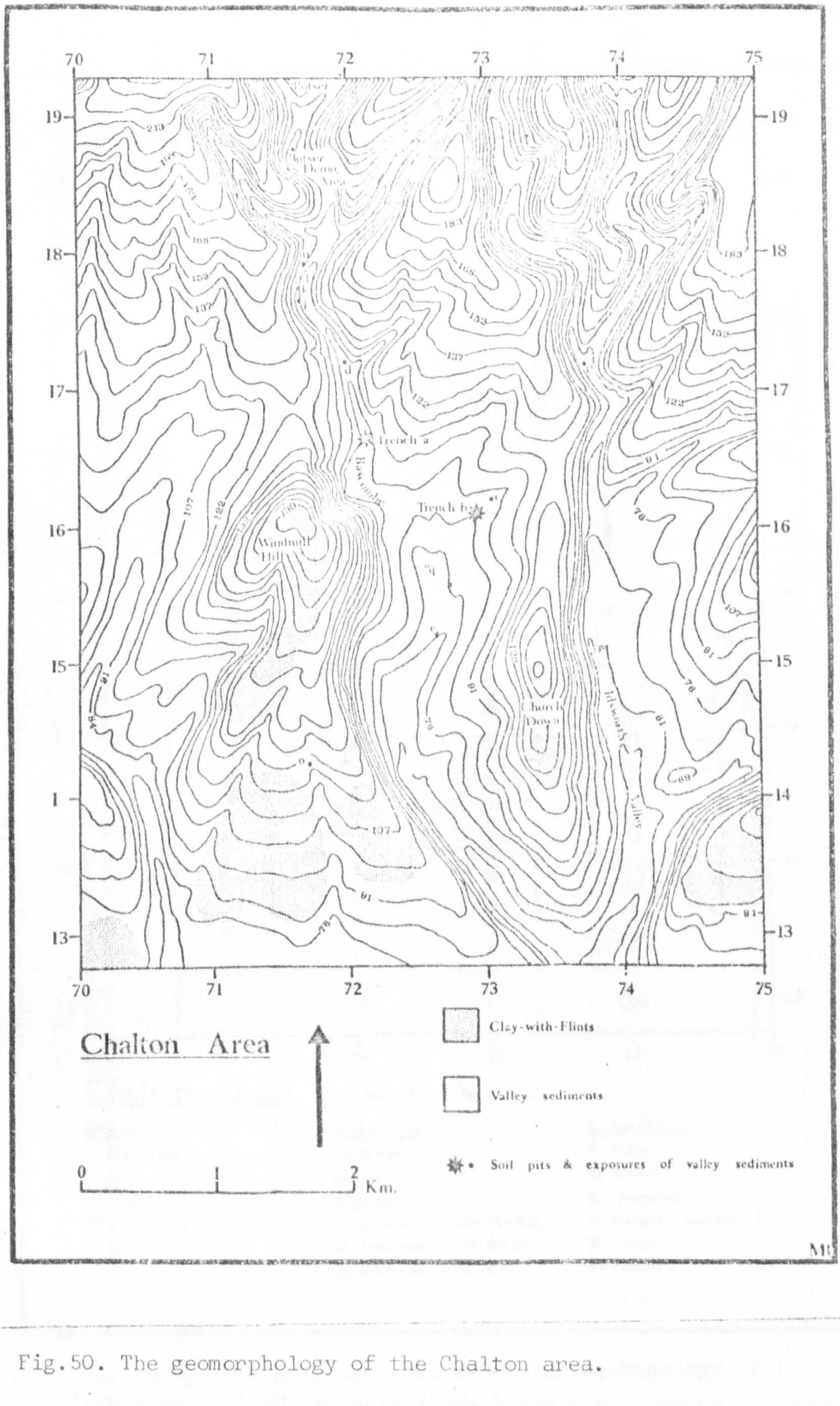


Fig.50. The geomorphology of the Chalton area.

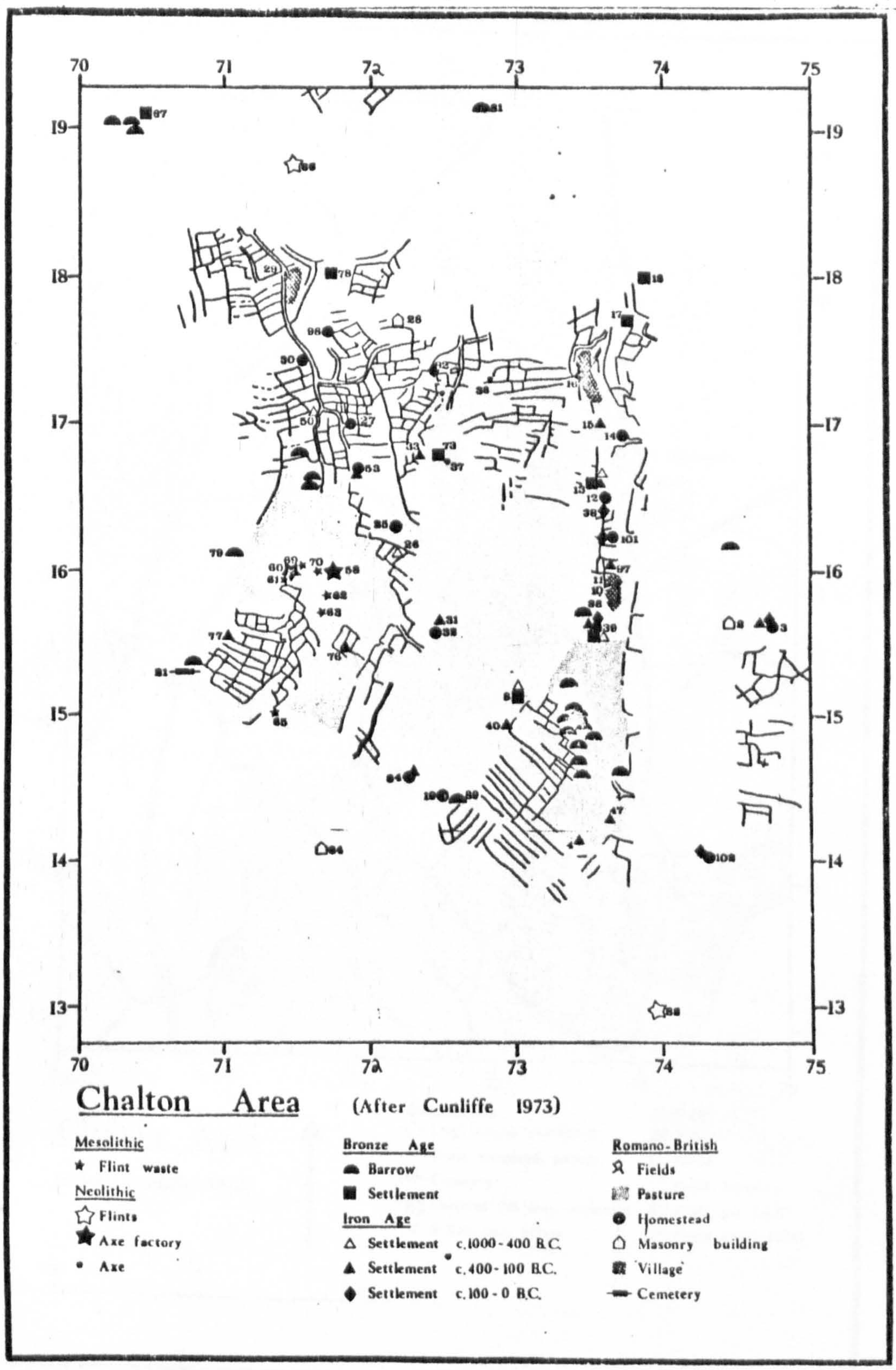


Fig.51. The prehistoric and Romano-British archaeology of the Chalton area, (after Cunliffe 1973, Figs. 2-5).

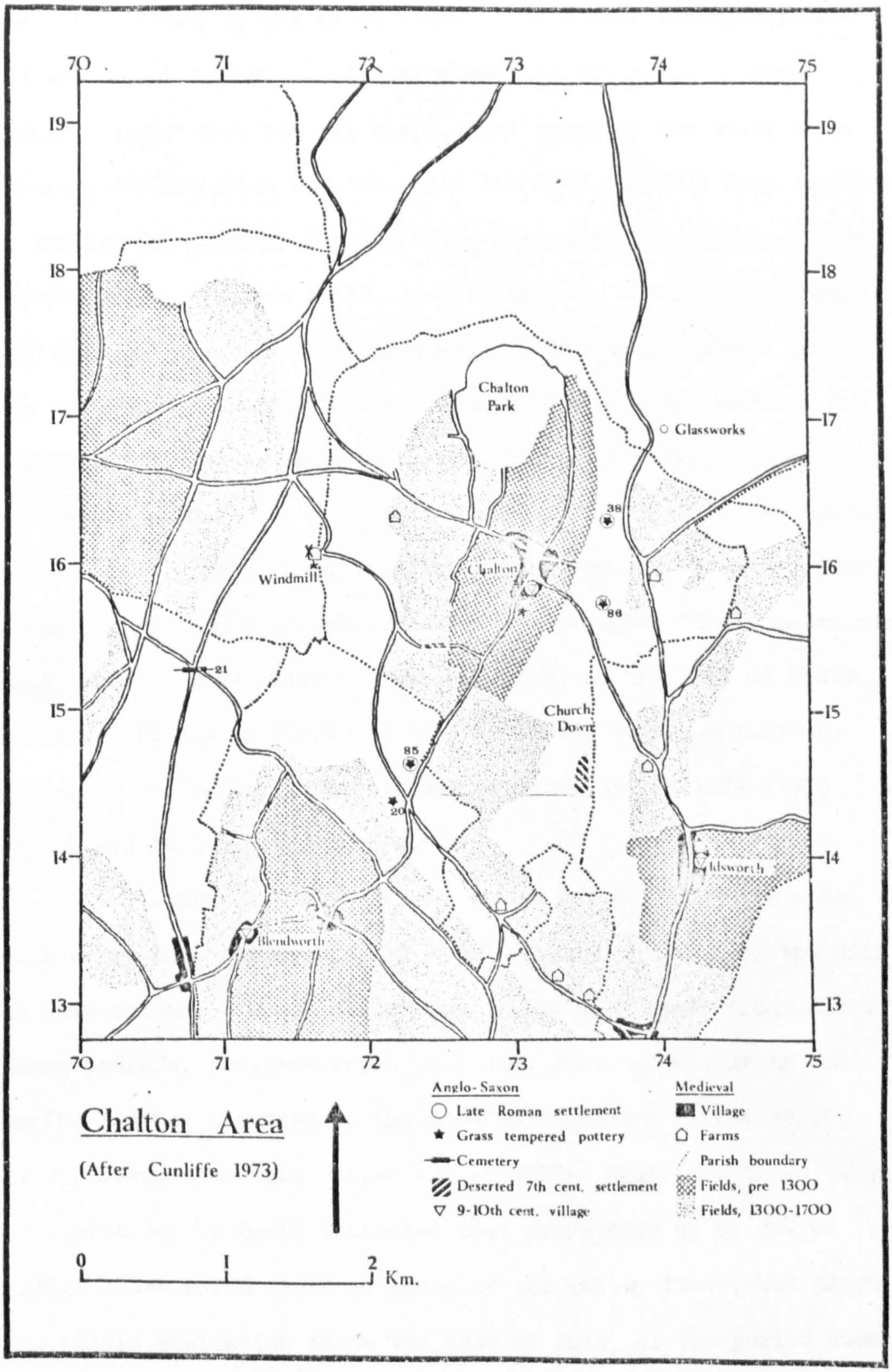


Fig.52. The Anglo-Saxon and Medieval archaeology of the Chalton area (after Cunliffe 1973, Figs. 6-7).

The Geological Survey (Sheet 316) shows that Middle Chalk is exposed by the first order valleys near the escarpment, but the solid geology of virtually all the dip slope is Upper Chalk. Lower down the dip slope, just south of the study area, Tertiary Reading Beds cap the chalk and have recently been exposed in section by cuttings for the A3. Clay-with-flints deposits are present as cappings on hills, such as Butser, Windmill Hill and Church Down, and form more continuous covers on the lower part of the dip slope. 'Coombe Deposits/Valley Gravel' are shown by the Geological Survey as extending no further north than the 54m. contour on either side of Church Down. However valley sediments can be clearly seen throughout the area showing up as dark brown bands against the stark whiteness of the ploughed fields on either side, even in very minor dry valleys (e.g. on the left of Plate XXXIX). It was on the basis of this visual evidence that the extent of the valley sediments was sketched by Cunliffe (1973 Fig.2) and is indicated on Fig.50.

Impressive dry valleys around Butser Hill have made this a key area for studies of their genesis. North of the hill is Rake Bottom, a short escarpment valley with steep sides and a sharp profile, features which have been cited in favour of the spring sapping hypothesis, the more so because a spring still exists lower down this valley (Small 1958; Small and Lewin 1965). Soil pits dug by Small indicated that there were up to 4m. of infill above solid chalk on parts of the valley floor, but there was little indication as to the date of this, or the period when spring sapping ceased to effect the overall morphology of the valley. Subsequent investigations indicated that Rake Bottom

Plate XXXV. Valley sediments exposed by the enclosure ditch of the Butser Iron Age Experimental Farm, Demonstration Area.

was of Devensian origin and the lower part of its fill consisted of meltwater deposits and chalk gravels with a restricted mollusc fauna indicative of cold periglacial conditions (Gordon and Shakesby 1973). South of Butser Hill laminated chalk meltwater deposits, consisting of rounded chalk granules in a calcareous matrix, have been exposed on various occasions in the Butser Ancient Farm Demonstration Area. Though the number of exposures studied is small it seems reasonable to conclude that, as in the other study areas, the dry valley system existed, more or less in its present form, by the end of the Devensian.

Several exposures of Postglacial valley sediments had been recorded in this area, though prior to the present study none was reliably dated. Soil pits in Rake Bottom revealed up to 70cm. of Postglacial sediment including a buried soil. Below this there was mollusc evidence for shaded conditions but from the soil horizon and above the fauna was of a much more open character (Gordon and Shakesby 1973). Spraggs (1971) investigated the first order valleys just south of Butser Hill and augering across the floor of one of these revealed little more than 90cm. of Postglacial deposit including an upper 40cm. thick blanket of 'dark brown clay' which was erroneously interpreted as dumped by early cultivators in order to thicken the available soil profile and support cropping (Spraggs 1971, p.27).

South of this in the main Bascomb Valley the enclosure ditch in the Butser Demonstration Area cuts across the valley floor and shows that it is covered by up to 1m. of Postglacial sediment (Plate XXXV), which contained pottery sherds and flint flakes of Neolithic/Bronze Age date (P.J. Reynolds, pers.comm.). 1km. further

Plate XXXVI.

Plate XXXVII.

Plates XXXVI and XXXVII. Valley sediments exposed in soakaways k (XXXVI) and l (XXXVII) in the main Bascomb valley in 1968 when an extension was being made to the A3 (Photos. John Budden).

down the valley four large soakaways were dug on the valley floor during the refurbishment of the A3 in 1968 (marked j-m on Fig.50). A photographic record made by John Budden shows up to 3m. of Postglacial sediment including thick bands of large flints, which in places were cemented together by carbonate deposition (Plates XXXVI and XXXVII). Below the flints was archaeological material including fragments of ? Roman pottery, bones and charcoal. Mr. Budden also observed a number of interesting exposures when a North Sea Gas pipeline was laid across the area: some 1.5m. of Postglacial sediment were seen in Bascomb at the spot marked q on Fig.50; near the head of Idsworth valley at p there was about 1m. of sediment, and in a very minor dry valley north of Blendworth (o) there was about 1.2m.

(b) Hydrology.

Seasonal streams are well attested in both the Bascomb and Idsworth valleys. The lavant in Idsworth valley rises in a wet winter as high as the 61m. contour, and last did so in 1974. Within living memory the lavant flowed from at least a mile further north (Cunliffe 1973, p.175). On the valley floor near Idsworth Church a slight channel representing the course of the lavant can be distinguished (Plate XXXVIII), and the isolated church is connected to the road by a footbridge. Lavants last flowed in the Bascomb valley about the turn of the century when they are reported to have flooded the cellar of a building at SU 71801805, but apparently disappeared underground on part of the valley (J. Budden, pers. comm.). Reference has already been made (p.59) to a fall in the watertable of the Hampshire Chalk since the Saxon period, and there can be little doubt that prior to Post-Medieval pumping the streams would have risen higher and more

Plate XXXVIII. The course of the Lavant at Idsworth Church where it has produced a slight channel on the valley floor.

frequently. All this suggests that Postglacial stream activity is likely to have been a more important factor in this study area than in those previously considered.

(c) The archaeological background (Figs.51 and 52).

Some years of systematic fieldwork by John Budden and Professor Cunliffe have led to the discovery of over 120 sites in this area. Cunliffe (1973) has provided an important outline of the evolution of the landscape on which this section is based, his site numbers have been retained. A major concentration of lithic material exists on the Clay-with-flints deposits on Windmill Hill. Six nucleations at the margins of the superficial deposits are dated to the Mesolithic, but Windmill Hill has also produced considerable quantities of Neolithic artifacts and knapping waste, so much so that two possible axe factory sites have been identified. Possible contemporary sites elsewhere in the survey area include two nucleations of flint waste (Sites 66 and 82) and two axe fragments (36 and 37). However, the comparative scarcity of lithic material, except on Windmill Hill, is a noteworthy feature and we will have to consider whether this is partly an artifact of preservation. Of the Bronze Age barrows most are clustered on Church Down and north of Windmill Hill, but the existence of isolated examples on lower ground led Cunliffe (1973, p.178) to wonder whether their predominantly hilltop distribution was partly a result of preservation. A Middle Bronze Age settlement (78) has been excavated on a spur beside Bascomb close to the four soakaway pits (Fig.50 j-m) on the course of the A3. The settlement comprised two huts, platforms and pits (Cunliffe 1970a) and has a radiocarbon date of 1245 $\pm$ 69bc (BM-583);

it appears to have been comparatively shortlived. A much larger Bronze Age settlement was located near the head of Idsworth valley (18), and other finds of pottery indicate that between 2500 and 1000 B.C. settlements became fairly widespread.

During the first millennium B.C. there appears to have been a steady increase in the number of settlements and the extent of field systems, furthermore the pottery indicates that settlements were continuously occupied. The two excavated Iron Age sites (50 and 15) were both somewhat eroded hilltop settlements represented only by isolated pits and postholes (Cunliffe 1976a). Here, as elsewhere on the South Downs, a basic thread of continuity marks the transition to the Roman period. Many sites continued in use, though others gradually appeared, including a small villa (28) and some masonry buildings (64 and 2), and a possible villa site (32) which has recently produced quantities of tile. During this period the 'Celtic' fields appear to have reached their maximum extent, exceeding the arable acreage of the sixteenth century A.D. Towards the latter part of the Roman period some of the small downland settlements seem to have gone out of use but simultaneously other sites (16, 29 and possibly 10) grew to almost 'village' proportions. Site 16 has been excavated and produced evidence of rectangular buildings of masonry and wood together with indications of small fields or garden plots on the periphery of the settlement, these were engulfed by its expansion in the late Roman period (Cunliffe 1976, p.52).

Undoubtedly the most interesting and enigmatic episode in the evolution of this landscape concerns the immediately post-Roman and Anglo-Saxon periods (Cunliffe 1972). Small numbers of grass-tempered sherds suggest that some of the Romano-British settlements (85, 38 and 86) may have continued in use. Dominating the area, however, was a large nucleated settlement established on what had been pasture on the windswept top of Church Down. This settlement, which dates to the seventh century A.D., has been excavated more or less in its entirety (Addyman et al. 1972; Addyman and Leigh 1973; Champion 1977) and consisted of 61 certain structures, mainly rectangular wooden buildings with some sunken huts and evidence of fenced enclosures. Sheep rearing and textile production were aspects of the economy much in evidence, and the carbonised seeds suggest "a downland environment indistinguishable from the landscape of the Iron Age and Roman periods, with evidence for the growing of barley" (Champion 1977, p.368). Why such a site should have been chosen is far from clear although its previously marginal character might have made it attractive if the settlers were new arrivals in a landscape much of which was already being exploited. In any case this inhospitable site seems to have been abandoned soon after the seventh century when, in all probability, the population shifted to the three much lower lying villages of Chalton, Blendworth and Idsworth which surround Church Down. Cunliffe (1973, p.185) argues that the bounds of the individual village territories, later formalised as parish boundaries, had been established by the late Saxon period. Chalton village itself may, in fact, have been occupied from quite an early date in the Saxon period because fragments of grass-tempered pottery have been found, as have later sherds of the ninth to eleventh centuries. During late Saxon and early Medieval times the evidence suggests that Chalton parish was exploited from the single nucleated village surrounded by an area of arable land, the approximate extent of which seems to have been some 250 acres by the mid-thirteenth century (Fig.52).

An expansion of fields occurred from the fourteenth century partly relating to the establishment of farms in areas which had been open downland. Despite this expansion the village continued to be surrounded by higher areas of virtually unbroken downland as late as the early nineteenth century. South of the parish, on the Tertiary and Clay-with-flints deposits, there is Medieval documentary and place-name evidence for woodland (Carver 1973, p.21); indeed this area round Rowlands Castle remains quite well wooded today. Just outside the north west corner of the parish there was a sixteenth century glasshouse which relied for fuel on local beechwoods (Cunliffe 1973, p.189), and from elsewhere in the area there is abundant field evidence of charcoal burning. During Post-Medieval times a further expansion of arable land-use occurred to the present position where almost all the parish, except very steep slopes, is under cultivation.

Several important points emerge from this brief résumé of the archaeological evidence. Firstly the remarkable density of sites, with its implication of the seeming intensity of prehistoric and early historic land-use. Secondly a comparison of the prehistoric and Medieval maps (Figs.51 and 52) shows that the large central area blank of prehistoric remains corresponds to the Medieval fields and can therefore be correlated with the destructive effects of later agriculture. Thirdly, despite the plethora of sites, there is a great paucity of palaeoenvironmental data; a few of the sites have produced bones or carbonised plant remains but we still know remarkably little about the ecological setting of this complex of sites. Studies of valley sediments obviously have a contribution to make to each of these problem areas. In the event the problem was tackled by excavating two main trenches and a number of soil pits. The main trenches were in contrasting valley bottoms: Trench a was on the floor of the major Bascomb dry valley, whilst Trench b was in its very minor tributary which lies just west of Chalton village.

(d) The Bascomb valley. (Figs. 50, 53 and 54).

No single name applies to the whole course of this valley. Cunliffe (1973) called it 'the Chalton valley' but that would lead to confusion in the present study, in which it is called Bascomb, since that appears to be the old name of the part of the valley with which we are particularly concerned. It has already been described how this valley originates in a fan-shaped arrangement of short first order dry valleys on the south slopes of Butser Hill. The heads of these valleys are between 200 and 250m. O.D., and they are steep backed (13^{o} exceptionally up to 22^{o}) with their sides reaching angles of between 20^{o} and 30^{o} in places (Spraggs 1971). On the long axis the slope decreases to about 3^{o} on the floor of the first order valleys, then in the main Bascomb valley there is a very gentle slope of between 1^{o} and 0.5^{o} down to, and beyond, the site of the trench. This lay about 4km. from the head of the valley at a point where its floor is at 86m. O.D. and the slope of its sides is comparatively gentle. The slope to the west rises at an average of 5^{o} up to Clanfield Down, that to the east at 9^{o} to Chalton Down.

The trench was situated just north of Chalton Lane, 15m.

Plate XXXIX. The relationship between Trenches a and b (arrowed) at Chalton.

Plate XL. The location of Trench b (arrowed) at Chalton.

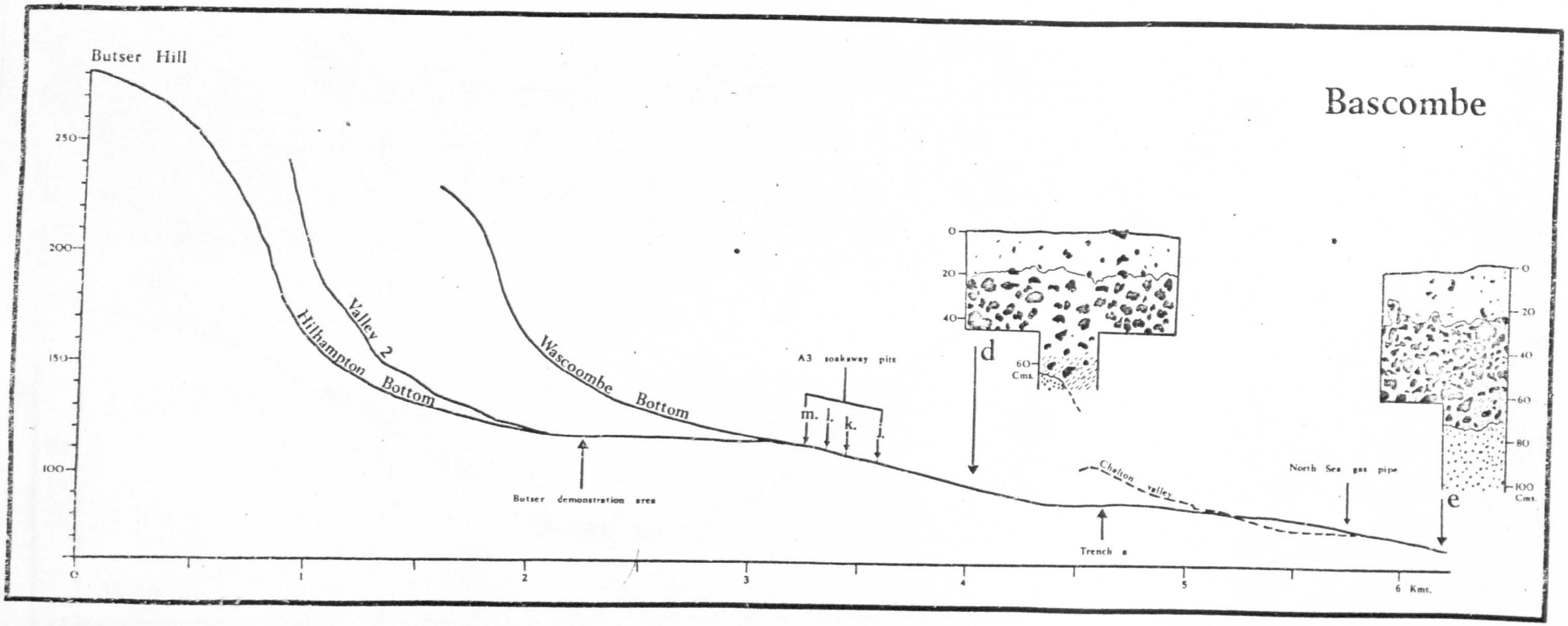


Fig. 53. The long profile of the main Bascomb dry valley, showing the sites of exposures of valley sediments and soil pits d and e.

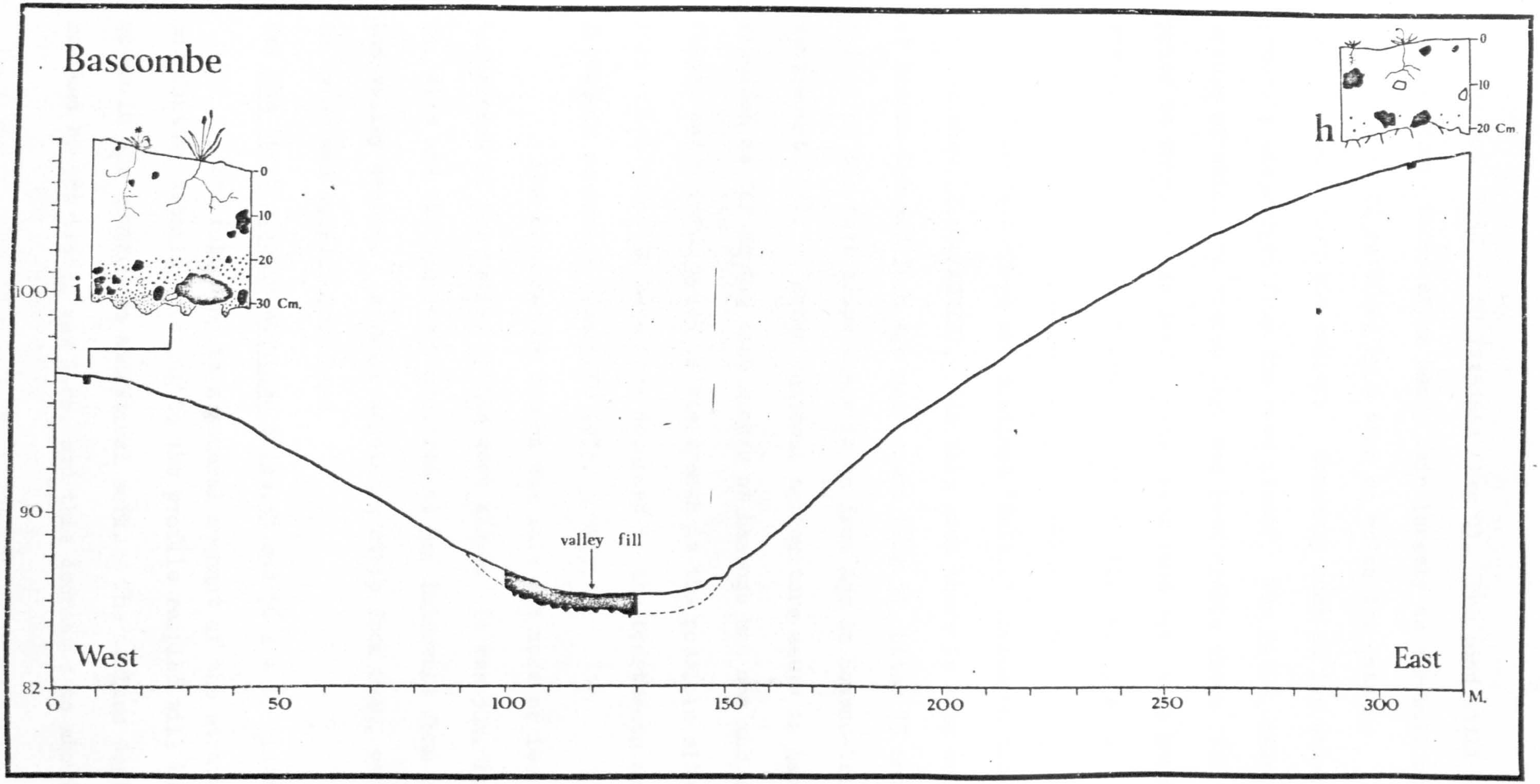


Fig.54. The cross-profile of the main Bascomb dry valley showing soil pits h and i.

from Bascomb Pond at SU 72151664 (Peg O). The pond still becomes damp today after heavy rain largely as a result of surface run-off retained by a bank on which the road is constructed across the valley; formerly much of its water was probably discharged from the road itself. The field, near the corner of which the trench lay, has been arable since 1946, prior to which it was sheep grazed grassland with some hawthorn scrub. In prehistory, however, parts of the valley were cultivated; some 550m. up valley a stony lynchet crosses the valley floor and there are distinct 'Celtic' fields on the slopes to the east (Plate XXXIX). In this area there is also evidence of Bronze Age and Iron Age settlement (Fig.51, Sites 73 and 33), whilst on the west slope there is an Iron Age to Romano-British settlement (53). Later Medieval agriculture seems to have expanded as far as the east slopes of Bascomb but not the valley floor, and c.400m. south of the trench is the possible site of a farm which seems to have been occupied in the fourteenth and fifteenth centuries (Cunliffe 1973, p.189).

The machine cut trench was laid out more or less from the centre of the valley up the west slope. It was 30m. long by 2m. wide and the pegs were numbered at 5m. intervals from 0 at the valley centre. A small adjoining strip from 0-4m. and 1m. wide was excavated by hand.

(e) The stratigraphic sequence (Figs.55 and 56 a + b; Plates XLI-XLIV)

The following is a general account of the stratigraphy and further details relating to the profile sampled will be given in the section on analytical work. The maximum depth reached by the trench was 1.8m. and this decreased to about 1m. at

Fig.55. Long section revealed by Trench a in Bascomb, Chalton.

the uphill end. The thickness of superficial deposits did not vary very much from one end to the other (average 90cm.) and was surprisingly slight compared to the other valleys we have considered. Each of the main layers has been numbered and they will be discussed, beginning with the earliest.

Layer 1. A Pleistocene deposit comprising rounded chalk pebbles and large angular chalk lumps in a hard calcareous matrix. In places there were pockets of more yellow, finer, chalky sediment which probably represent poorly defined involution structures.

Feature 1a. An irregular bowl-shaped pocket in the surface of Layer 1 at 17.3m. from 0 on the opposite side to the drawn section (Fig.56a). It was 71cm. wide and 30cm. deep, filled with large and small chalk pieces in brown soil. The feature was comparable with the other subsoil hollows described and was further studied by mollusc analysis.

Layer 2. Silty clay loam with numerous small gravel grade flints and some large nodules but no visible chalk pieces. The layer completely covered the Pleistocene deposits but was of variable thickness and went down into V-shaped pockets in the underlying chalk. It appeared that these features were primarily the products of solution, the more so because below them the chalk had clearly been stained by percolating water (Plate XLII) and towards the base of these features there were signs of clay accumulation. The presence of flint artifacts and the fact that similar sediment was found above the (clearly Postglacial) subsoil hollow (Fig.56a) suggests that this layer is of partly Postglacial pedogenic origin. At the same time some of this clay loam with flint is likely to have arrived in the valley during the Postglacial

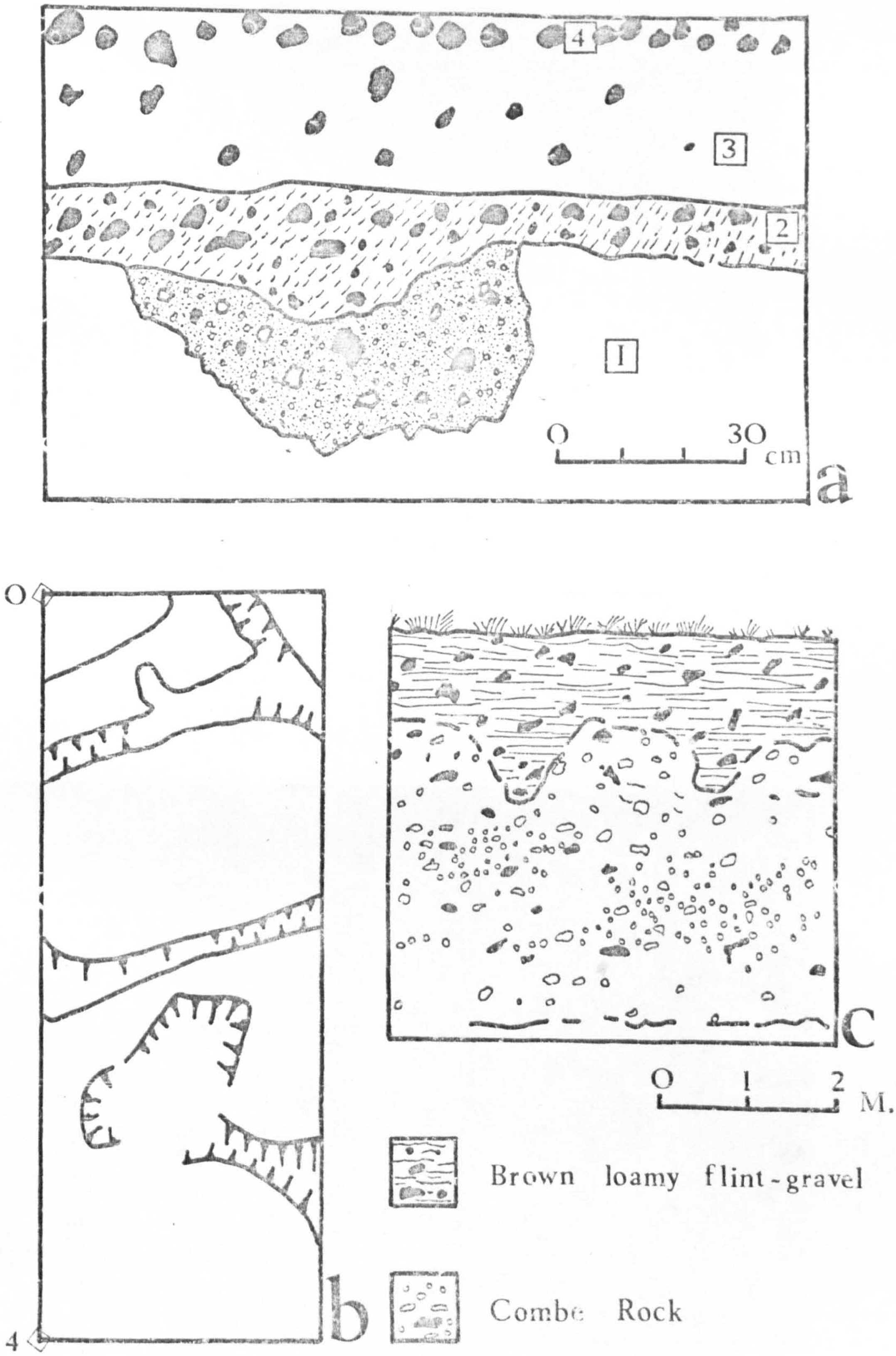


Fig.56. (a) Sketch section of the subsoil hollow in Trench a.
(b) Sketch plan of Chalk surface in hand excavated part of trench.
(c) Section of sediments in Havant Brook valley (after White 1913, Fig.15).

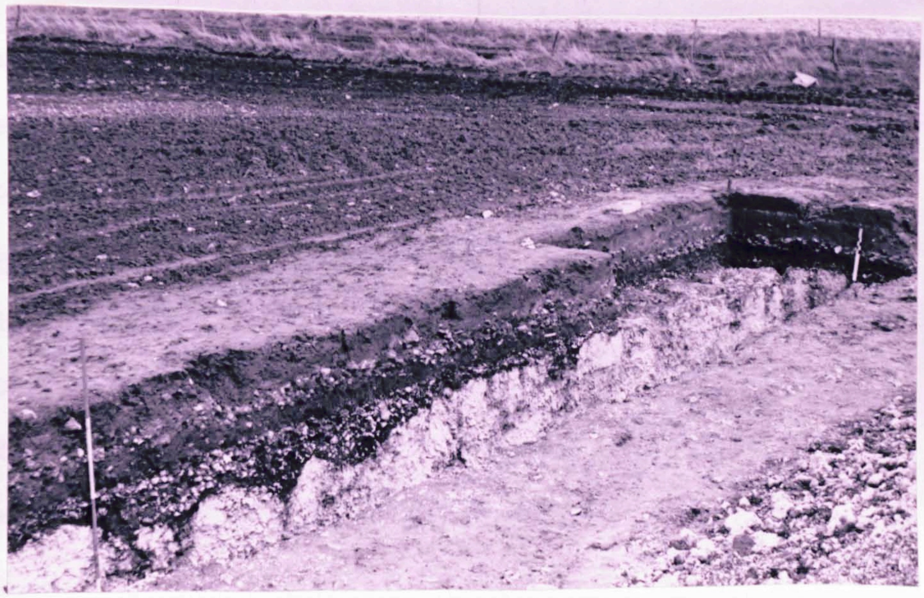


Plate XLI. Trench a, Bascomb, Chalton, showing the small area of hand excavated sediments near the valley centre. Scale metric.

Plate XLII. Trench a, Bascomb, Chalton, showing solution features at the base of the Postglacial Sequence. Scale metric.

because the exposure of the base of the layer in plan (Fig.56b) revealed a regular pattern of pockets of clay loam, involuted in places below the chalk.

Layers 3 to 7. These five layers consist of horizons of more or less stone-free silt loam alternating with layers of flint nodules, all of them were virtually devoid of obvious chalk particles (Plate XLIV). The lower flint band (4) was a substantial one, 20cm. thick, the upper one (6) was only one flint thick. Each of the five layers was clear in the hand excavated portion of the trench but became progressively less distinct upslope, where they tended to merge. An alternating sequence of stony and stone-free layers of this kind could reflect successive episodes when the different particle sizes were carried into the valley. More probably, what we see are the products of phases when sediment was deposited on the valley floor, alternating with standstill phases when it was sorted by earthworms.

Layer 8. A band of white/light yellow material which occurs at the base of the modern top soil (Plate XLIV). The layer is interrupted and varies in thickness from 1 or 2cm. near the valley centre to 10cm. at 30m. where it obviously consists of small pea grits of chalk which are also present, but in a much rotted and decomposed form, near the valley centre. Presumably the layer is a chalky pea grit zone which is in the process of being leached away. Pea grit zones form at the base of rendsina soils under pasture so this layer may represent the pastoral episode which came to an end c. 1946. As for the source of calcareous material, we have already recorded how, under intensive grazing and rabbit activity, much chalk found its way

Plate XLIII. Trench a,Bascomb, Chalton. Solution features with overlying stone-free and stone horizons. Scale metric.

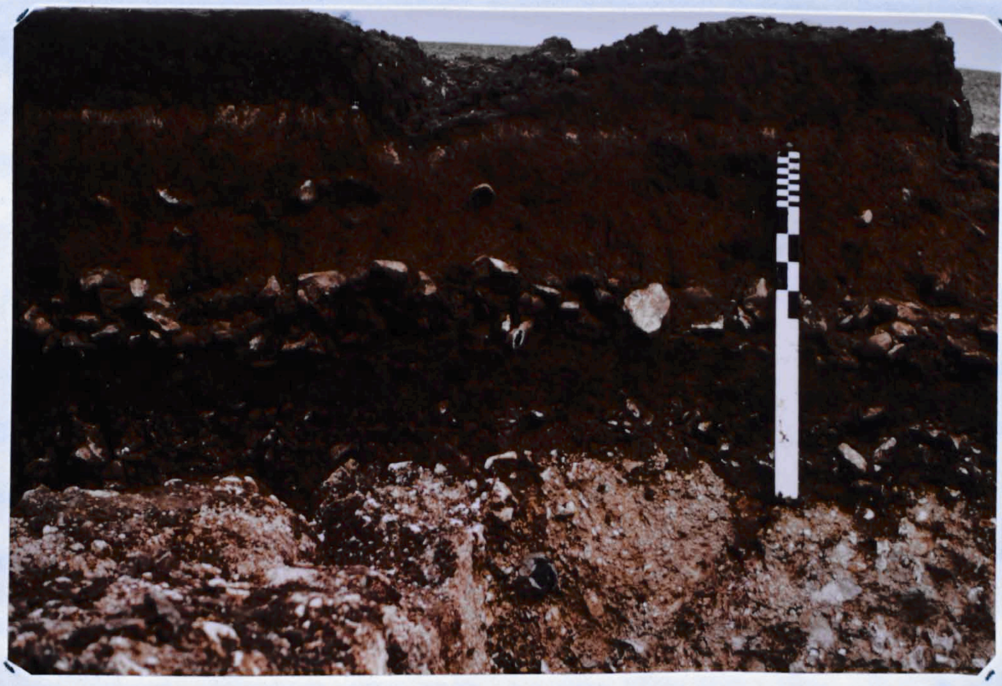


Plate XLIV. Trench a, Bascomb, Chalton. Detail of stone-free and stone horizons near the valley centre. Scale metric.

onto the surface of South Down sheep pastures (p. 50). This material would work its way down to the valley floor and be sorted into a pea grit subsoil zone by earthworms.

Layer 9. A 25cm. thick brown humic top soil under cultivation.

(f) Dating using artifacts.

Because of the rather shallow deposits encountered by this trench the area excavated by hand was kept to a minimum. A total of only 374 artifacts was three-dimensionally recorded (Table XVIII), but these do provide some indication of the dates of the layers. So little pottery was found that we do not need, at this stage, to consider the minutiae of pottery fabric description which will be fully dealt with in the section on Trench b (p. 336).

Flint artifacts (Fig.57).

These were fairly abundant especially towards the base of the trench. What was particularly interesting was the occurrence of a significant number of flint flakes, retouched pieces and four scrapers in the basal clay loam (Layer 2). Although these flints might be Palaeolithic they show few of the signs of damage expected in a solifluction deposit, and it is more economical to conclude that the layer is Postglacial or has at least been reworked in the Postglacial. As regards the date of this lithic activity, Dr. Roger Jacobi kindly looked at a few of the more blade-like pieces from the lower levels and concluded that a late Mesolithic, or more probably an early Neolithic date would not be inappropriate for these pieces.

Pottery (Fig.57 and 58).

One sherd of prehistoric Fabric 51 came from Layer 2

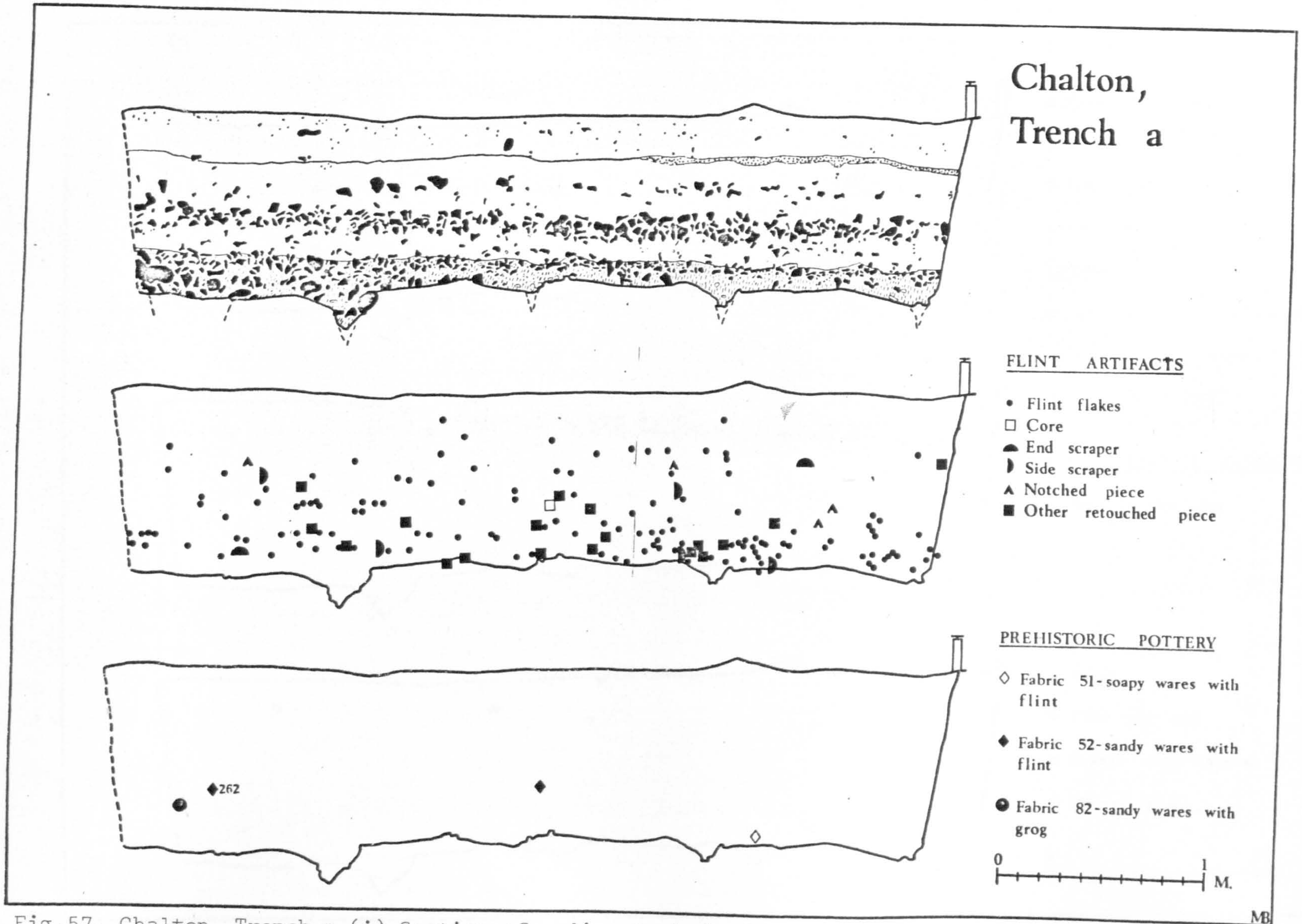


Fig.57. Chalton, Trench a (i) Section of sediments in hand excavated portion of trench.(ii) Distribution of flint artifacts. (iii) Distribution of prehistoric pottery.

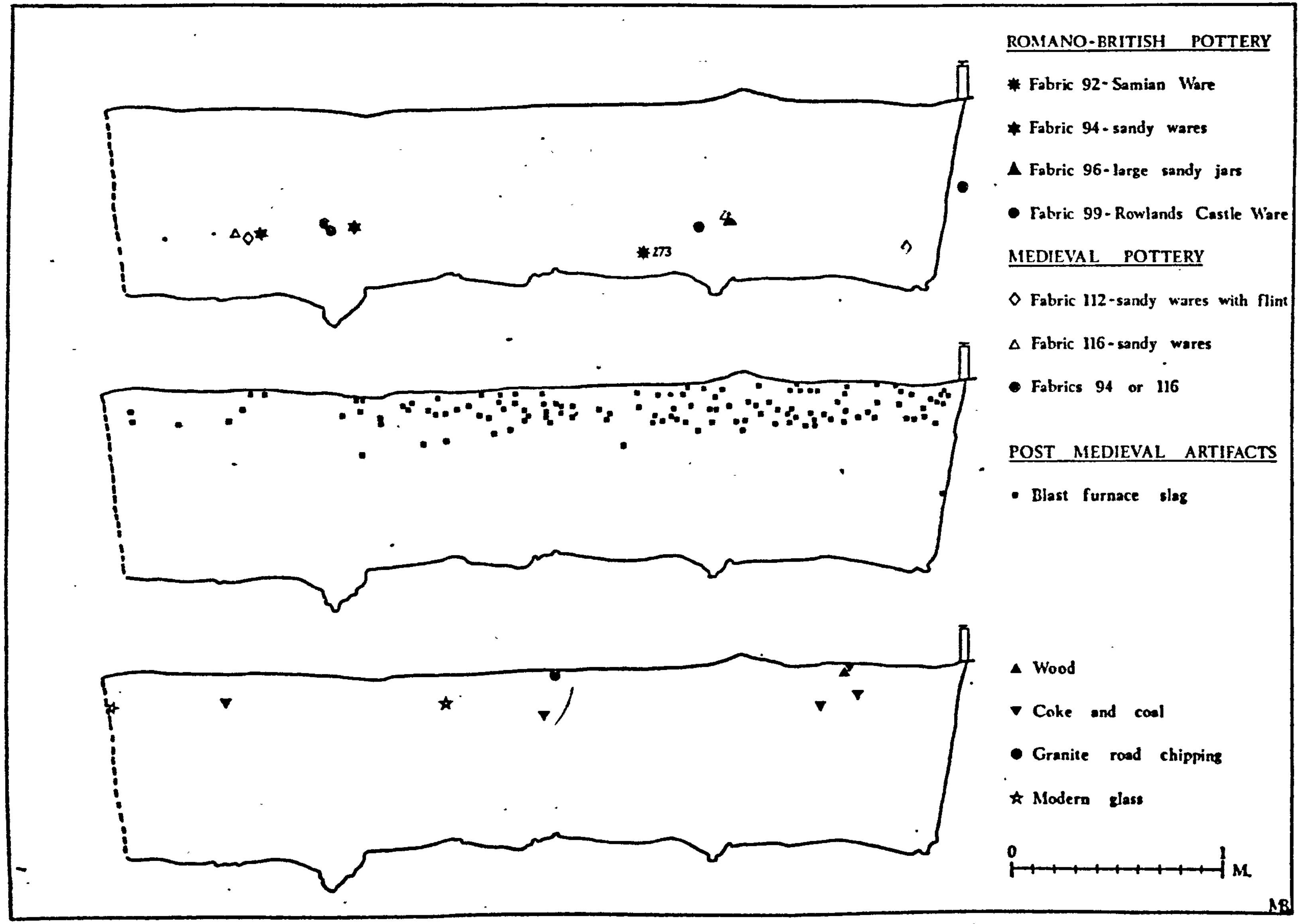


Fig. 58. Chalton, Trench a. (iv) Distribution of Romano-British pottery. (v and vi) Distribution of Post-Medieval artifacts.

	Type numbers	Artifact types	Numbers	% of total artifacts
Flint artifacts	1	Core	1	0·3
	3-7	Flint flakes	140	38·3
	11	End scraper	3	0·8
	12	Side scraper	5	1·4
	15	Notched piece	5	1·4
	47	Other retouched piece	20	5·5
Prehistoric pottery	51	Soapy ware with calcined flint grits	1	0·3
	52	Sandy ware with calcined flint grits	4	1·1
	82	Pottery with a predominant filler of grog, calcined flint & sand	2	0·5
Romano-British pottery	92	Samian ware	1	0·3
	94	Sandy wares	3	0·8
	96	Large sandy hand-made storage jars	1	0·3
	99	Rowlands Castle ware	1	0·3
Medieval pottery	112	Sandy wares with multi-coloured flint grits	2	0·5
	116	Sandy Medieval wares	3	0·8
	94/116	Roman or Medieval sandy wares	3	0·8
Other artifacts	138	Roman hob-nail	1	0·3
	141	Charcoals	1	0·3
	158	Coke and coal	5	1·3
	160	Alkaline slag	152	41·5
	161	Daub	1	0·3
	163	Wood	1	0·3
	165	Iron pyrite	4	1·1
	181	Bone and teeth	3	0·8
	183	Modern glass	2	0·5
	190	Granite road chipping	1	0·3
Flint artifacts total			174	47·5
Flint tool total			33	9
Pottery total			21	5·7
Total diagnostic sherds			2	0·5
Grand total of artifacts			366	-
Total non artifactual pieces misidentified in excavation			8	-
Total 3D recorded			374	-

Table XVIII. The numbers and proportions of the artifact types in Chalton, Trench a.

but the circumstances of its discovery - appalling weather conditions - mean that it may not have been in situ. In any case the fabric is one which would not be out of place in any period up to the middle Iron Age. The remainder of the pottery all came from Layers 3 and 4. The earliest sherds were prehistoric: two sherds of Fabric 52, one of which (262) was a rim from a plain open bowl which Professor Cunliffe suggests probably dates to the first half of the first millennium B.C., and an undiagnostic sherd of Fabric 82. There was also Roman material: one sherd (273) of South Gaulish Samian ? Form 27 dated to the first century A.D., from the base of Layer 3; a sherd from a large, sandy, handmade, storage jar of Fabric 96; two sherds of sandy ware Fabric 94, and one sherd of Rowlands Castle Ware. The same layers, however, also produced Medieval pottery - 2 sherds each of Fabrics 112 and 116 - showing that the entire stratigraphy above Layer 2 is Medieval or later. This leaves an enormous chronological gap between Layers 2 and 3 which, in view of the intense prehistoric and Roman activity known in this area, can only be explained by an intervening episode of erosion. We can conclude that the alternating silt loam and stone horizons probably began to accumulate in the Medieval period, but it is noteworthy that absolutely no artifacts which are likely to be contemporary with deposition came from Layers 5, 6 or 7. The only artifacts they contained were flints, probably redeposited from the valley sides. Farmers at this time do not seem to have practised any form of manuring which introduced artifacts, and this might point to a largely pastoral régime, possibly with little more than short term arable phases.

Post-Medieval artifacts (Fig.58)

These included substantial amounts of blast furnace slag from steel production which was utilised in the Post-Medieval period as a medium for adding available lime and phosphate on both arable land and improved pasture (Russell 1936). The practice was last followed in this field within the lifetime of the present farmer. The other Post-Medieval artifacts were a miscellaneous selection - wood, modern glass, a granite round chipping, coal and coke. Virtually all of them came from the modern top soil (9), and the half dozen pieces of slag found marginally lower can probably be accounted for by undulations in the base of this layer.

(g) Laboratory Analysis.

Analytical work was concentrated on a column of samples between 60 and 80cm. from the 0 peg running from the present ground surface to the top of the chalk. The following is a description of the sediments:-

Layer No. (and depth)	Description.
Layer 9 (0-18cm)	Dark yellowish brown (10YR 4/4) silt loam, virtually stoneless but with a few small chalk pieces; subangular blocky structure; some voids, fissures and pores caused by roots and earthworms; sharp smooth boundary; pH 7.6.
Layer 8 (18-21cm)	Yellowish brown (10YR 5/4) silt loam with few flints but with distinct mottled zones representing decayed chalk (10YR 7/4) and some very small chalk pieces; sub-angular blocky structure; some voids, fissures and pores, sharp smooth boundary; pH 8.3.

Layer 7 (21-33cm)	Dark brown (7.5YR 4/4) silty clay loam, stoneless, subangular blocky structure; common very fine roots; clear smooth boundary; pH 7.4.
Layer 6 (33-37cm)	Dark brown (7.5YR 4/4) silt loam with abundant medium and small flint nodules; subangular blocky structure; common very fine roots; clear smooth boundary; pH 7.6.
Layer 5 (37-49cm)	Dark brown (7.5YR 4/4) silt loam, stoneless; granular to subangular blocky structure; few very fine roots; sharp smooth boundary; pH 7.6.
Layer 4 (49-60cm)	Reddish brown (5YR 4/4) silty clay loam with extremely abundant large, medium and small flint nodules; subangular blocky structure; very few fine roots; abrupt smooth boundary; pH 8.2.
Layer 3 (60-73cm)	Dark reddish brown (5YR 3/3) silty clay loam with very few small flints; traces of prismatic peds; numerous fissures and pores; sharp smooth boundary; pH 7.4.
Layer 2 (73-83cm)	Dark brown (7.5YR 4/4) silty clay loam with extremely abundant large, medium and small flints; subangular blocky structure; sharp irregular boundary; pH 8.3.
Layer 1 83 + cm)	Pale yellow (2.5YR 8/4) marl containing common flint nodules and very abundant large, medium and small rounded chalk pieces; pH 8.5.

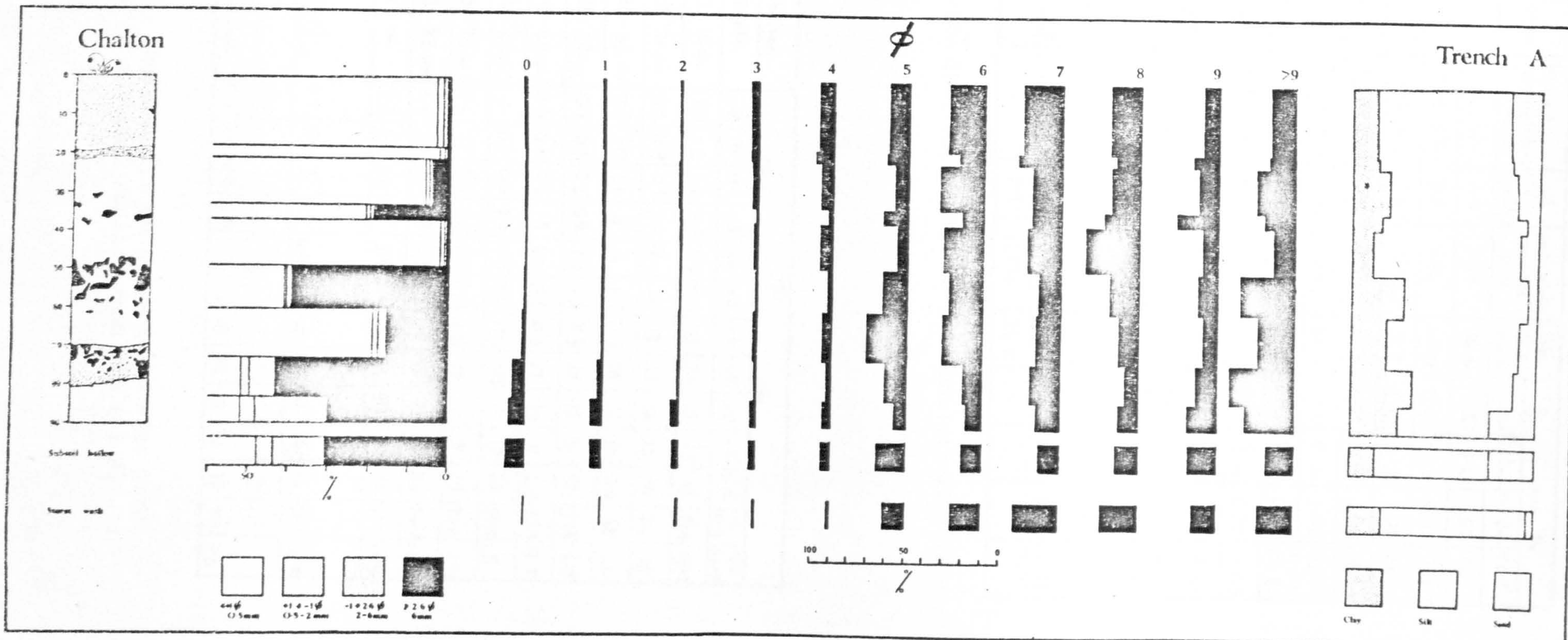


Fig.59. Particle size analysis of Chalton,Trench a. On the left are the proportions of the larger fractions in a 1 kg. sample. In the centre are the results of sieve and sedimentation analysis of a 40 gm sample of material smaller than 2mm (-1 Ø). On the right is a summary diagram showing the fluctuating proportions of clay, silt and sand in the 40 gm. sample.

Sample	Layer	Munsell designation (moist)	pH $(CaCl_2)$	ppm alkali soluble O.M.	% acid soluble	Particle size % >6mm	2-6mm	0.5-2mm	<0.5mm
0-10cm	9	10YR 4/4	7.6	1184	36.6	0.57	1.2	1.57	96.66
18-21cm	8	10YR 5/4	8.3	496	40.4	0.4	0.6	0.93	98.07
25-33cm	7	7.5YR 4/4	7.4	472	31.8	4.65	0.52	1.00	93.83
33-37cm	6	7.5YR 4/4	7.6	256	35.2	19.29	0.52	1.05	79.23
40-45cm	5	7.5YR 4/4	7.6	256	44.2	0.50	0.34	1.02	98.14
49-60cm	4	5YR 4/4	8.2	208	26.8	39.20	1.28	0.69	58.83
65-73cm	3	5YR 3/3	7.4	116	21.8	15.45	2.24	1.27	81.03
73-83cm	2	7.5YR 4/4	8.3	176	24.8	42.85	6.60	2.14	48.46
83+ cm	1	2.5YR 8/4	8.5	12	90.6	29.93	17.42	3.81	48.84
Subsoil hollow	1a	–	8.4	108	72	30.55	12.74	3.84	52.87
	1a					38.62	14.05	3.14	44.18
Stormwash		–	7.9	1504	26.8				

Table XIX. Chalton, Trench a, soil analytical data.

Bascomb, Chalton		Sand					Ø		silt					
Layer number	Depth	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	>9	% silt	% Sand
9	0-10cm	0.9	1.2	1.2	3.7	7.8	10.1	19	20	15	7.5	13	71.6	15.7
8	18-21 cm	0.6	0.8	0.8	3.8	8.4	11	13	22	12	13	14	7.1	15
7	25-33 cm	0.9	1.0	1.1	3	6	6.5	22.5	15	14	10	20	68	12
6	33-37cm	0.7	0.8	0.5	0.8	2.2	12.5	11.3	15	18	21	16	77.8	6.5
5	40-45cm	0.6	0.6	0.5	1.9	6.1	5.3	21.3	17	27	8	11.5	78.6	9.7
4	49-60cm	1	0.8	0.6	0.7	1.9	12.43	17.5	11.25	15	10	28	66.18	5
3	65-73cm	1.5	1.1	0.7	2.0	4.8	21.06	21.25	12	10	7	19	71.3	10.1
2	73-83 cm	6.6	1.8	0.9	0.9	2.3	11.2	10	15	7	11	33	54.2	12.5
1	83 + cm	8.2	5.5	3.8	3	3.9	5.6	8	12	10	15	25	48.1	24.4
1a 1a	Subsoil hollow	9.7	5.2	3	2.7	4.4	15.1	10	10	11	14	14	59.1	24.9
	Stormwash	0.1	0.4	0.9	0.9	1.2	11.5	15	22	18	12	18	79	3.5

Table XX. Chalton, Trench a, particle size data relating to material smaller than 2mm (-1 Ø).

(h) Soil tests.

Particle size analysis.

Material from the 1kg. sample used for mollusc analysis was divided into four fractions (Table XIX; Fig.59), which emphasise the alternating sequence of stony and stone free layers already described and attributed partly to earthworm sorting. Layer 8, however, comes out as having a very low stone content, presumably because at the point sampled the chalk pieces were almost totally decomposed - leaving only a whiter, more calcareous band. There is an overall decrease in the proportion of larger fractions towards the surface reflecting a reduced contribution of Layer 2 type material, which is further emphasised by the sieve and sedimentological analysis (Fig.59, Table XX). This shows that the Pleistocene layers and Layer 2 contain a higher proportion of sand than the overlying layers, and that Layer 2 has more clay, probably as a result of Postglacial illuviation. The much later deposits overlying Layer 2 consist basically of silt.

Simple soil tests.(Table XIX; Fig.60)

Organic matter tests showed a reasonably high figure of 1200 p.p.m. from the present cultivated top soil (Layer 9), below which there was a steady decline to around 200 p.p.m. in the underlying layers with a slight increase in Layer 2, possibly relating to the deposition of downwashed organic matter. The subsoil hollow produced 108 p.p.m., a level consistent with its inferred Postglacial date and contrasting with the underlying meltwater deposit (1) which contained a barely measurable amount (12 p.p.m.).

Calcimetry tests showed fairly uniform levels of between 20 and 40% acid solubles in Layers 3 to 9. A slight increase

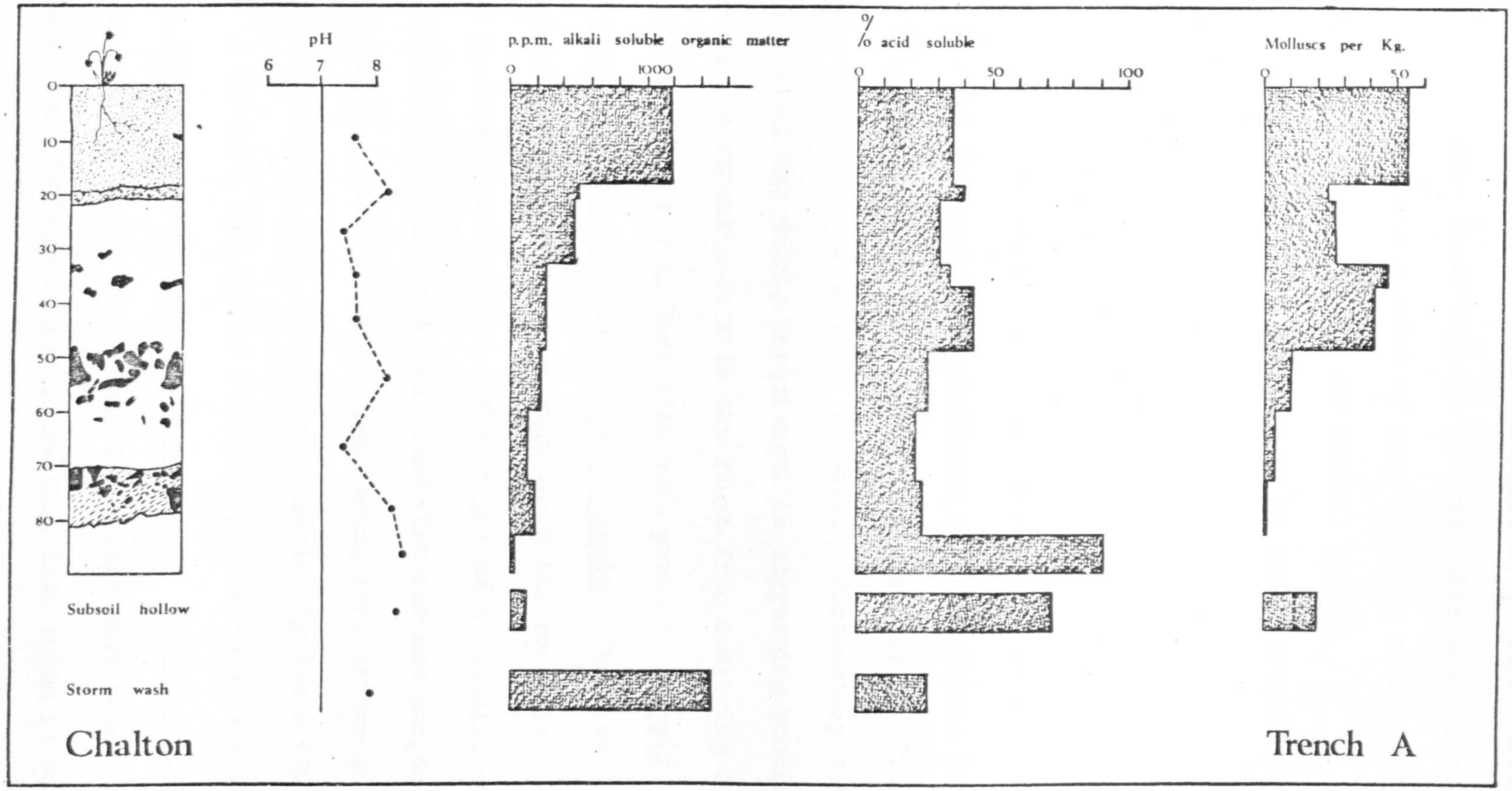


Fig.60. Graph of soil analytical data from Chalton, Trench a.

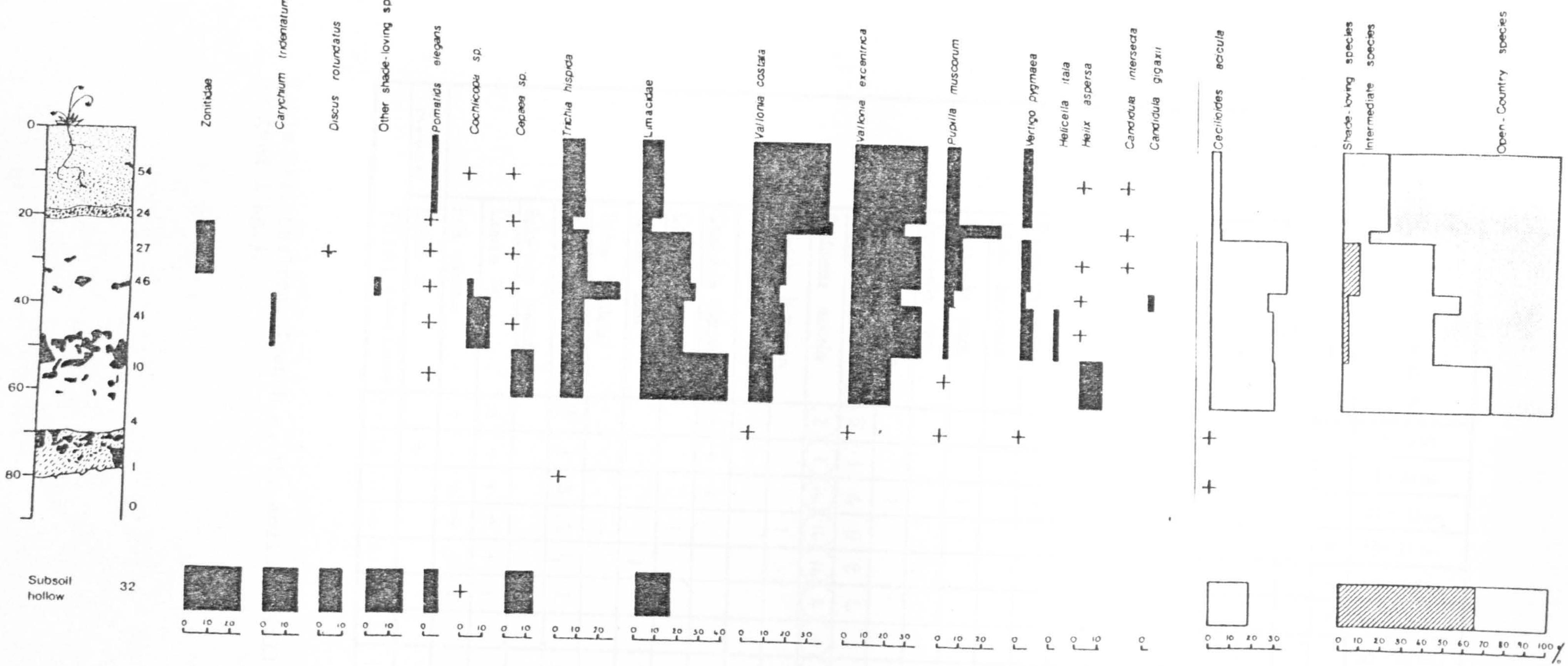
in Layer 8 is accounted for by the presence of a small number of rotted chalk pieces. These figures contrast with the underlying meltwater deposits which consist of over 90% acid solubles. High levels (72%) were also found in the subsoil hollow.

pH tests showed all samples to be alkaline and between 7.5 and 8.5.

(i) Mollusc analysis (Table XXI, Fig.61).

Study of the fauna from this trench was restricted by the small numbers of individuals extracted from each layer. The earliest context which contained molluscs was the subsoil hollow (Feature 1a); even there, despite the highly calcareous fill, there were only 32 apices in 2kgs. of soil. Fortunately even this small sample was fairly unequivocal in suggesting woodland conditions quite at variance with the fauna from overlying deposits. Members of the shade loving Zonitidae were present: *Aegopinella pura*; *Oxychilus cellarius* and *Vitrea contracta*. There were also examples of *Carychium tridentatum* which has recently been described by Kerney and Cameron (1979, p.58) as a catholic species because it does occur in chalk grassland (Cameron and Morgan Huws 1975), but which is very commonly found among leaf litter and was originally classified with shade loving species by Evans (1972, p.195). A woodland habitat is certainly indicated by the presence of *Discus rotundatus* and *Acanthinula aculeata*. *Pomatias elegans*, which also prefers fairly shady habitats, would have been attracted to this feature by its loose fill into which it could burrow.

Taken as a whole the fauna does not include any members of



Chalton

Trench A

Fig.61. Chalton, Trench a, mollusc analysis of Column 3.

	Bascomb, Chalton Trench A Mollusc Column 3	0-10 cm	18-21 cm	25-33 cm	33-37 cm	40-45 cm	49-60 cm	65-73 cm	73-83 cm	83 + cm		Subsoil hollow a	Subsoil hollow b
Land Molluscs	Pomatias elegans	1	+	+	+	+	+					2	+
	Carychium tridentatum					1						2	3
	Cochlicopa sp.	+	1		1	4						+	
	Vertigo pygmaea	2		1	1	2		1					
	Pupilla muscorum	3	6	2	2	1	+	1					
	Vallonia costata	19	9	4	6	6	1	1					
	Vallonia excentrica	19	6	9	11	14	2	1					
	Acanthinula aculeata											1	2
	Discus rotundatus			+								2	1
	Vitrea contracta												2
	Aegopinella pura			1									1
	Aegopinella spp.											+	
	Oxychilus cellarius			1								3	2
	LIMACIDAE	5	1	6	11	8	4					5	
	Cecilioides acicula	2	1	14	16	16	4	1	1			2	5
	Clausilia bidentata				1								1
	Clausiliidae											+	
	Candidula intersecta	+	+	+									
	Candidula gigaxii				1								
	Helicella itala					1							
	Trichia striolata											1	
	Trichia hispida	5	1	3	12	4	1		1				
	Helicigona lapicida											+	+
	Cepaea sp.	+	+	+	+	+	1					4	+
	Helix aspersa	+		+	+	+	1						
Marine molluscs	Ostrea sp.		+										
	TOTAL (minus C. acicula)	54	24	27	46	41	10	4	1	0		20	12

Table XXI. Chalton, Trench a, the molluscs (all samples weighed 1 kg.).

Evans' (1972) open country ecological group, and consists mainly of the woodland group, with some of intermediate ecological preferences. The fauna is basically similar to what we have seen in the subsoil hollows at Kiln Combe and Itford Bottom, and it seems quite likely that the feature represents a fossil tree hole. Unfortunately it is without dating evidence, although the presence of Pomatias elegans implies a date after c. 6000 B.C. (Kerney 1966, p.5), and Discus rotundatus after c. 5000 B.C. (Evans 1972, p.184). In all probability therefore we are looking at a fauna of late Mesolithic or Neolithic date; much later seems unlikely in view of the extent of archaeologically attested activity in this area.

The remainder of the mollusc fauna came from column 3 near the centre of the valley (Fig.55). The chalk meltwater deposit at its base was devoid of Mollusca and the clay loam with flints (Layer 2) virtually so, with a solitary individual. We have already seen that the overlying layers 3 to 9 were very much later and probably began to accumulate in the Medieval period. In these layers the main species were Vallonia costata, Vallonia excentrica, Limacidae and Trichia hispida. Basically this is the open restricted fauna which we have seen from colluvial deposits in the other study areas (Table X). Here also Vallonia excentrica predominates over Vallonia costata but there is a much smaller proportion of Trichia hispida. Occasionally in Layers 3 to 9 members of the Zonitidae, Carychium tridentatum and other shade loving species crop up in low numbers, but the occurrence of these various species does not correlate in any way which would hint at an ecological change towards a more shady environment. Likewise there is little sign of species which we might associate with more stable grassland conditions. Both Pupilla muscorum and Vertigo pygmaea are present but in low numbers. The former shows some signs of a peak in Layer 8 but it is surprising that the fairly stable periods of sorting hypothesised on the basis of stone lines were not indicated by changes in the mollusc faunas. All this, together with the small number of individuals present, might indicate that the layers accumulated fairly rapidly, and that as they did so there was arable land in the immediate vicinity.

In view of what has been said about the possibility of lavant activity in this valley it is interesting to note the absence of species indicative either of fresh water or wet ground. This would seem to suggest that there was not perennial running water at this point in Bascomb during or since the Medieval period.

The occurrence of the introduced Helicellids tends to support the chronological outline already advanced. Helix aspersa, a Roman introduction, is present down to Layer 4; Candidula gigaxii, a post Roman introduction, is present in Layer 6 and Candidula intersecta, a Medieval introduction, is present in Layers 7 and above. Presence of another apparently recent introduction, Cecilioides acicula, in some numbers below 20cm. reflects the suitability of this silty soil for their burrowing activities and also their preference for cultivated areas.

(j) The soil pits.

Two soil pits were dug with the intention of examining the profile upslope on the same axis as the trench (Fig.54).

Soil pit h. On the east side of Bascomb 175m. from the O peg at the edge of a ploughed field. Over most of this field the plough is bringing up chalk (Plate XXXIX), but some patches of clay and flints are also present.

Ap (0-22cm)	Brown (7.5YR 4/4) silty clay loam with common medium and small flints and small and very small chalk pieces; subangular blocky structure; sharp smooth boundary.
C (22 + cm)	White (1oYR 8/2) chalk bedrock.

Soil pit i. On the west side of Bascomb, 130m. from the O peg on the edge of a ploughed field.

Ap (0-22cm)	Dark brown (7.5YR 3/2) silt loam with a few medium flint nodules, granular structure; abrupt smooth boundary.
AC (20-33cm)	Strong brown (7.5YR 5/6) silty clay loam with abundant large and medium flint nodules and many very small and medium chalk pieces; subangular blocky structure.
C (33 + cm)	White (10YR 8/2) chalk bedrock.

Additional to the various previous exposures of sediments in Bascomb, already described, two soil pits were dug on the valley floor (Fig.53).

Soil pit d. In the centre of the valley 620m. north of Trench a in the midst of arable land and in an area where the valley floor was narrow and the steep adjoining slope to the west was white with eroded chalk, but the valley itself was floored with darker sediments. 27m. south of the pit was a clear positive lynchet consisting largely of flints.

Layer 1 (0-22cm)	Ploughsoil with common medium and small flint nodules; abrupt smooth boundary.
Layer 2 (22-67cm)	Brown loam with abundant large and medium flint nodules but the flint content decreases towards the base where more clay is apparent. Abrupt irregular boundary, near the base of the pit was a possible subsoil feature, solution pipe or Pleistocene feature.
Layer 3 (67 + cm)	White marl with small chalk pieces, Pleistocene chalk meltwater deposit.

Soil pit e. Near Netherley in the valley centre (SU 72631522) 1.5km. down valley from Trench a. Here the valley floor was broad and has probably been under cultivation since early Medieval times.

Layer 1 (0-24cm)	Dark brown (7.5YR 3/2) silty clay loam with common medium and small flint stones but no visible chalk; subangular blocky structure; clear smooth boundary. This layer produced one body sherd of Medieval Fabric 116 and a flint flake.
Layer 2 (24-72cm)	Dark reddish brown (5YR 3/3) clay loam with extremely abundant large and medium flint nodules; no visible chalk; sharp irregular boundary.

Layer 3 (72 + cm) Yellow (10YR 7/6) marl with abundant small and some medium white chalk pieces. Pleistocene deposit.

(k) Conclusions and problems from Trench a.

Several features set this valley apart from the others we have considered: the shallow nature of the deposits for such a major dry valley, the absence of colluvium which can be dated to the prehistoric and Romano-British periods, and the late date of the comparatively thin colluvium which was present. Some hint as to how Layers 3 to 9 may have accumulated was provided by an exceptional storm on the night of 24/25th March, 1979. The next morning the trench held up to 60cm. of water and Soil Pit e was full of water: both took over a week to drain and when they did so a blanket of silt remained. At the bottom of the valley sides near Trench a there were signs of small scale erosion caused by surface run-off. Rills had formed on the slopes up to c. 15cm. deep, their positions determined partly by the tracks of vehicles used in harrowing the field two days previously. The material eroded was deposited in small fans and pools on the valley floor (Plates XLV and XLVI). The particle size composition of the silt laid down in the trench compares closely with that from Layers 3 to 9 (Fig.59), and a significant proportion of the sediment in those layers could have been laid down as the result of a multiplicity of exceptional storm events over a lengthy period.

The presence in the valley of subsoil horizons with a higher proportion of clay (e.g. Layer 2) presumably reduced permeability and led to an increase in run-off. What is

Plates XLV and XLVI. Fine alluvial sediments laid down near Trench a in Bascomb during a single night of very heavy rain on 24-25.3.79.

significant is that Layer 2 contains artifacts, and seems therefore to be partly the result of Postglacial pedological processes such as clay translocation which, as they occurred, would have engendered more run-off and erosion.

There are also indications that the dense and hard Pleistocene chalk deposits which floor these valleys are less permeable than one might anticipate. Trench a and Soil Pit e were cut down to the Pleistocene deposits yet both retained water for well over a week. All the indications were that this particular flooding episode resulted from surface run-off rather than a dramatic rise in the water table. However, we do know that lavant streams have flowed in Bascomb. This poses the problem - have they removed sediments, thus explaining the hiatus between the lithic times of Layer 2 and the Medieval period? It is difficult to imagine that lavants would have been competent, given the very gentle slope of the valley floor (0.5° to 1°), to remove completely large amounts of material from the valley. We do, however, know that there is some lateral variation in the thickness of sediments with deeper deposits being revealed by the gas pipeline at q and the soakaways j - m. It is particularly difficult to believe that flint nodules would have been totally swept away by lavant action. There is, however, evidence for concentrations of these on the valley floor: a layer up to 1m. thick in Pit I (Plate XXXVII); the flinty lynchet across the valley near Soil Pit d; and in Trench a itself, the flinty character of parts of Layer 2 (Plate XLI). These very flinty layers in other major dry valleys on the chalk have been interpreted as the result of the removal of fines by running water (Catt and Hodgson 1976, p.189). Tentatively then we may suggest that some fine grade material is likely to have been removed but coarser grades may have been localised within the valley. There is an interesting similarity between the sediments revealed by this study and those reported further down the same valley at Rowland's Castle by White (1913, p.76). His 'section of the valley of the Havant Brook' (Fig.56c) shows 15cm. of stony loam topsoil underlain by 1m. of loamy flint gravel piped into Coombe Rock. This is essentially the same stratigraphy that we have observed higher up the valley in what seems to have been the lavant's fossil course.

(1) <u>The minor valley at Chalton</u> (Figs. 50 and 62).

Because the sediments in Bascomb were so shallow the opportunity was also taken to look at a very minor dry valley which skirts Chalton village on its western edge. As Plate XL demonstrates this could hardly have been a more slight topographic feature. It originates at about 115m. O.D. on the gently sloping, and little dissected, dip slope running south from Holt Down. The valley floor slopes at a modest 3° up to the point where it is cut across by Chalton Lane. On the uphill side of this is a fairly steep bank; the result of colluvial build-up and downcutting by long continued traffic. Beside the lane is a pond originally created, perhaps, within the depression so formed. Down valley from the pond the floor slopes at less than 1° to the site of Trench b and beyond this to the main Bascomb valley which it joins near Pit q. The valley has an asymmetrical profile and Trench b is at a point where the valley floor is at 84.5m. To the west is a very gentle rise of 2° to Pit g and beyond at <u>c</u>.87m.,

Plate XLVII. Trench b, Chalton, showing the very slight nature of this dry valley.

Plate XLVIII. Trench b,Chalton, showing hand excavation in progress.

the slope then levels off and then gradually falls again to another very minor, and roughly parallel, dry valley. The east slope is quite different, it is rather steeper (c. 3.5°) and longer, for there is a continuous rise up to Chalton peak at c. 116m., consequently the valley has a considerably greater catchment to the east than to the west. It seems most unlikely that such a minor dry valley would have carried a lavant at any time in the Postglacial. The pond is clearly dependent on surface run-off, largely from Chalton Lane, and a well just beside it is 83m. deep.

The field in which the trench was excavated was under grass at the time of the excavation, but in recent years it has been periodically cultivated and reseeded. It lies within the area of early Medieval arable round Chalton (Fig.52) which Cunliffe (1973, p.187) argues is likely to have been cultivated since about the ninth century A.D. He further suggests that the boundary of early Medieval arable was formed by a former north-south lane just west of the valley. This reasoning gains support from the rather crenelate plan of this track, probably created by former cultivation strips running in an east/west direction from the village. Medieval pottery, including a few fragments of late Saxon material and some Portchester Ware, has been found in the same field as the trench. Today Chalton village is somewhat shrunken compared to the Medieval period when settlement may have extended to the northern part of the field on Chalton Lane where there were certainly Post-Medieval farm buildings.

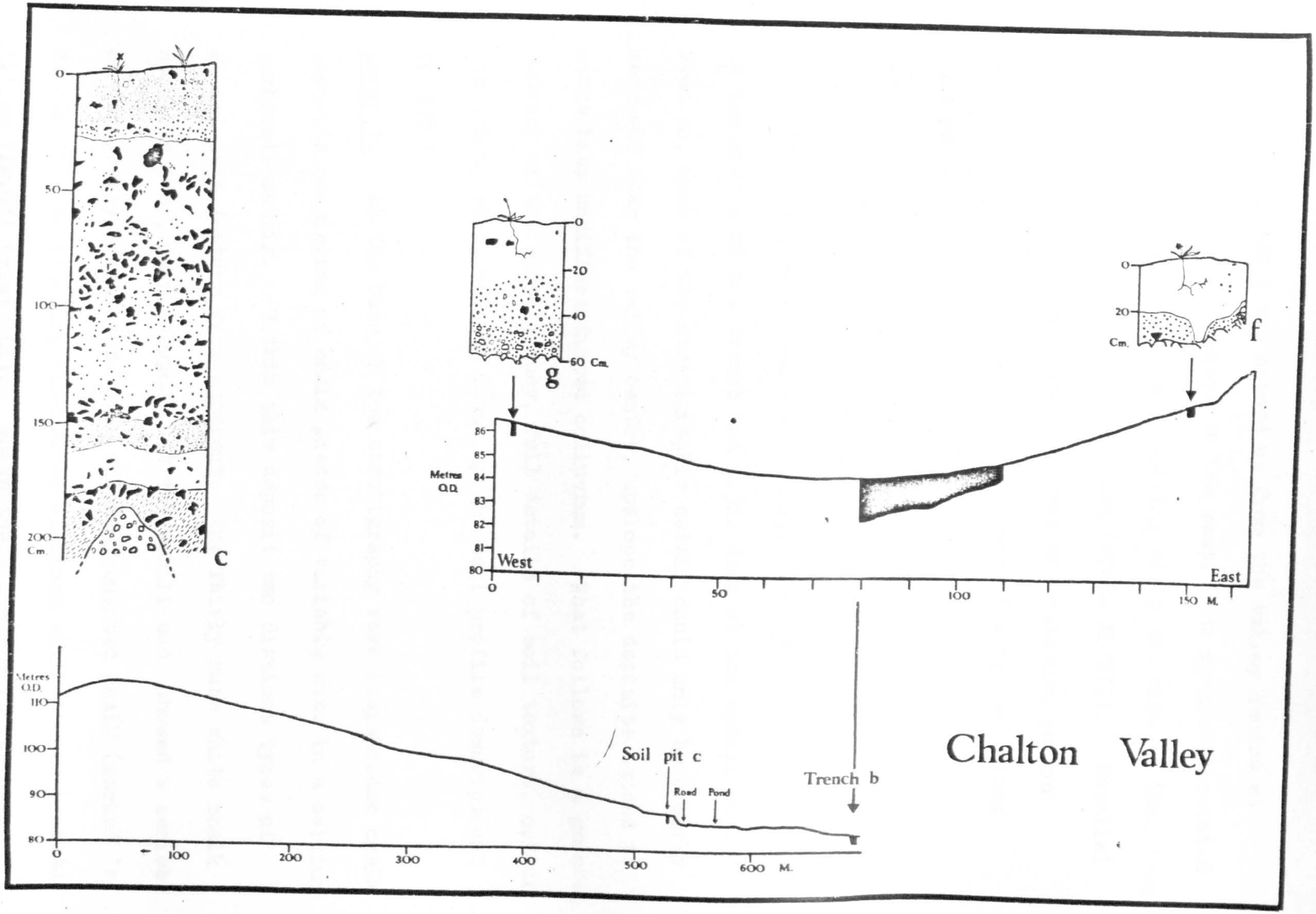


Fig.62. The long and cross-profiles of the minor dry valley which lies on the west edge of Chalton village.

Trench b was opened up from the valley centre at SU 7295416079 30m. upslope to the east. The machine excavated trench was 3m. wide, and an adjoining strip 1m. wide by 10m. long was hand excavated on the north side (Plate XLVIII). Parallel to the trench and about 6m. south was an enclosure period hedgeline but there was no sign whatever of a lynchet along this boundary.

(m) <u>The stratigraphic sequence.</u> (Fig.63 and Plates XLVII - LIV).

Near the valley centre the trench was 2.2m. deep; the deposits became shallower very gently, they were still 2m. deep in the middle of the trench and 1.3m. deep at the uphill end. Even so, much of the stratigraphic detail could only be clearly made out near the valley centre, upslope the deposits tended to merge into undifferentiated colluvium. What follows is a general summary of the stratigraphy, full details of soil texture, colour, structure, etc., will be found in the soil profile descriptions (p.359).

<u>Layer 1.</u> At the base of the stratigraphy were Pleistocene chalk deposits consisting of chalk pieces of variable size in a calcium carbonate matrix. Within this deposit two distinct types of Pleistocene feature were apparent. The fairly pure white chalk deposits (1a), mainly exposed at the uphill end, showed a series of vertically orientated zones of hard cemented chalk (marked 'h' on Fig.63), alternating with zones of loose chalk pieces (marked 'l' on Fig.63) (Plate LI). Above these zones were typical Pleistocene involutions filled with small chalk pieces in a yellow/brown calcium carbonate matrix (1b). The involutions were well developed and over 60cm. deep near the valley centre,

Fig.63. Long section of the deposits in the very minor dry valley at Chalton revealed by Trench b.

but beyond about 12m. they became gradually shallower and finally vanished upslope (Plate L) in a way reminiscent of what happened at Itford Bottom (p. 214) and again probably the result of erosion.

Layer 2. Uphill from the 20m. peg the Pleistocene chalk was overlain by 10-20cm. of angular chalk pieces in brown soil, presumably the result of weathering of the chalk surface and showing in places, such as at 21.4m., deeper weathered channels probably representing ancient root penetration into underlying loose Pleistocene chalk deposits (Plate LI).

Layer 3. Between 0 and 20m., the Pleistocene chalk deposits were covered by a dark brown silty loam without any obvious calcareous component. Upslope beyond 6m. this deposit consisted of 10-20cm. of fairly flint free sediment (3a) but there were deeper pockets. One such, between 15 and 18m., was 60cm. deep and had channels at its base which were reminiscent of root penetration (Plate LI), suggesting perhaps that the pockets might represent fossil treeholes. There was another pocket at 22.4-23.5m. where Layer 3 did not form a continuous cover over Layer 1. This pocket surrounded and isolated a patch of Pleistocene chalk deposit: a phenomenon which might have resulted either from root activity or solution. Pockets between 0 and 6m. had a flinty top fill (3b), and beyond 6m. this became reduced to an intermittent band of single flints at the junction between this layer and the overlying deposits (Plates L-LII).

This layer presents not inconsiderable problems for interpretation which echo those already outlined in discussion of the essentially similar Layer 2 in Trench a. Here again artifacts were present making it probable that Postglacial

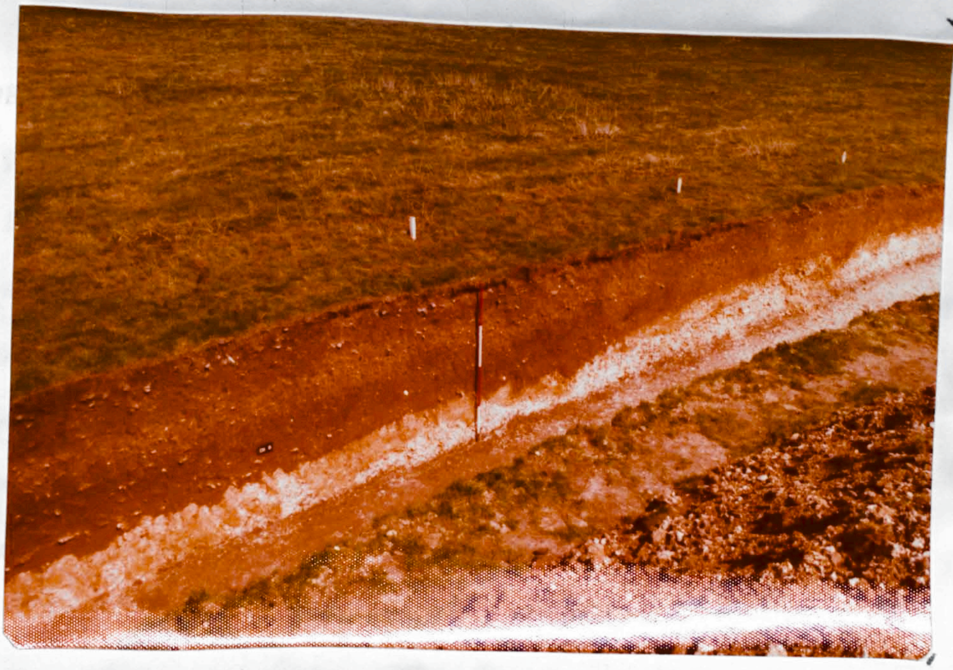


Plate XLIX. Valley sediments in Trench b, Chalton between 15 and 30 m from the valley centre. Scale 2m.

Plate L. Chalton, Trench b, sediments between 15 and 30m from the valley centre. Scale 2m.

pedogenesis was at least partly responsible for the layer in its present form. Dr. R. Macphail who examined the layer in the field suggested that it represents a weak Bt horizon. There is a pronounced difference between this and the overlying deposits which seemed, in the field, to have lower clay and higher organic matter contents. The abruptness of this difference, the smooth sloping plain on which it occurred and the chronological disparity which will be reported between this layer and what overlay it, seemed to suggest that erosion had taken place at the surface of Layer 3.

Layer 4. At the lower end of the trench between 0 and 10m., there was a band of brown silty soil some 10cm. thick which had a much lower stone content than the adjoining layers and was devoid of obvious chalk pieces (Plate LIII). This is interpreted as a band from which flints had been sorted by earthworm activity.

Layer 5. A typical unsorted colluvial sediment, brown silty soil and flint nodules, but without chalk pieces. It merged with the surface of Layer 4 implying that the latter had been disturbed by cultivation which initiated colluviation. The layer was 50cm. deep in the valley centre and gradually became thinner upslope disappearing at c. 17m.

Layer 6 - 8. Between 0 and c. 3m. from the valley centre there were two very obvious flint bands with a layer of dark brown/black humic soil sandwiched between them (Plate LIII and LIV). The basal flint layer, which was 10-15cm. thick (6), and the overlying 20cm. stone free layer (7) presumably represent a standstill phase of some duration. Sorting to this extent could obviously happen under any conditions of reasonable surface stability, but I am grateful to Professor Walter Russell for the

Plate LI. Chalton,Trench b, showing the subsoil feature near 20m. The position of some possible ancient root penetration into the loose, underlying Chalk is marked by arrows. Scale 2m.

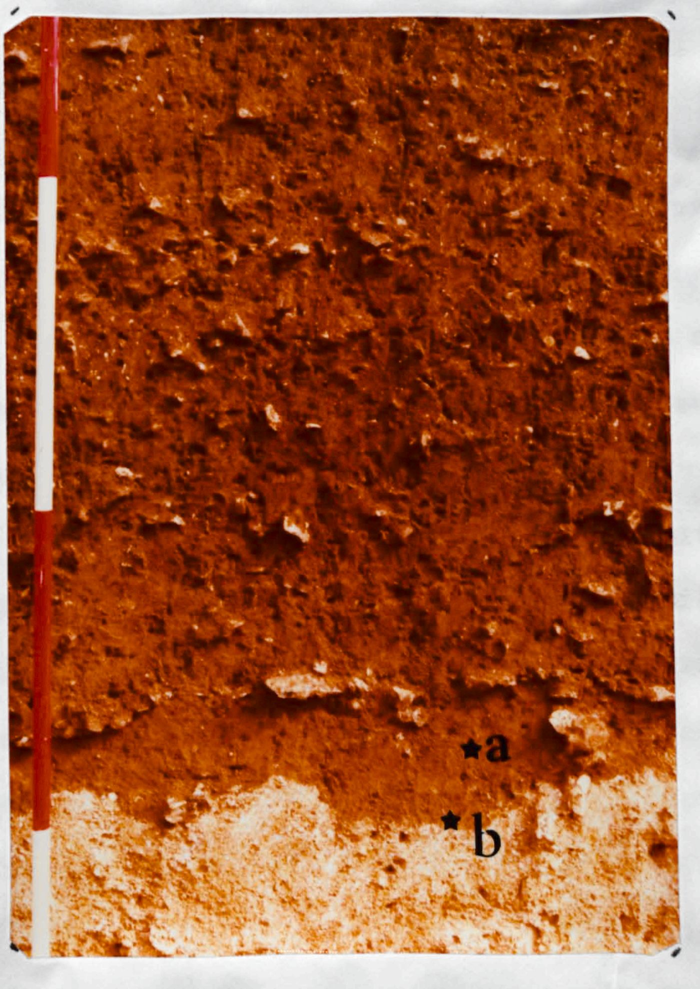


Plate LII. Chalton, Trench b, showing a possible truncated palaeosol with an overlying stone horizon c. 15m from the valley centre. The stars mark the position of micromorphological Samples a and b. Scale 50 cm divisions.

observation that the junctions between Layers 6 to 9 are so level and regular as to preclude tree or shrub growth at this stage and make it probable that we are concerned with a grassland episode. Beyond about 3m., Layers 6 and 7 gradually merge, ceasing to exist as discrete entities. A vestige of this standstill horizon did however appear between 10 and 20m., where at the surface of Layer 5 there was a band of darker, apparently more humic soil (7a) between 10 and 20cm. thick (Plates XLIX-LI); this did not show any signs of sorting but it seemed to be in the correct stratigraphic position for a continuation upslope of Layer 7. If so we must assume that subsequent cultivation has blurred the layer between 3 and 10m., and indeed it did seem to be more extensive in the opposite face of the trench.

The overlying layer of flints (8) is more difficult to understand in terms of sorting from the deposits above. Although these layers are relatively poor in flints they are very rich in artifacts, which would lead one to expect a marked concentration in any stone horizon at its base - this was absent. What may have happened is that the inferred stone free horizon was reworked into a later colluvial deposit at which time the artifacts were incorporated in quantity. This layer also provides an opportunity to consider the possible role of decalcification in giving rise to flint bands of this kind. Laboratory studies show that this layer, and those below it, contain in the order of 10% acid solubles, whereas the overlying deposits had c. 30%. Decalcification would increase the proportion of acid insolubles, including flints, by about 20%. It is also conceivable that the flints were laid down during some discrete land-use episode, and various possibilities have

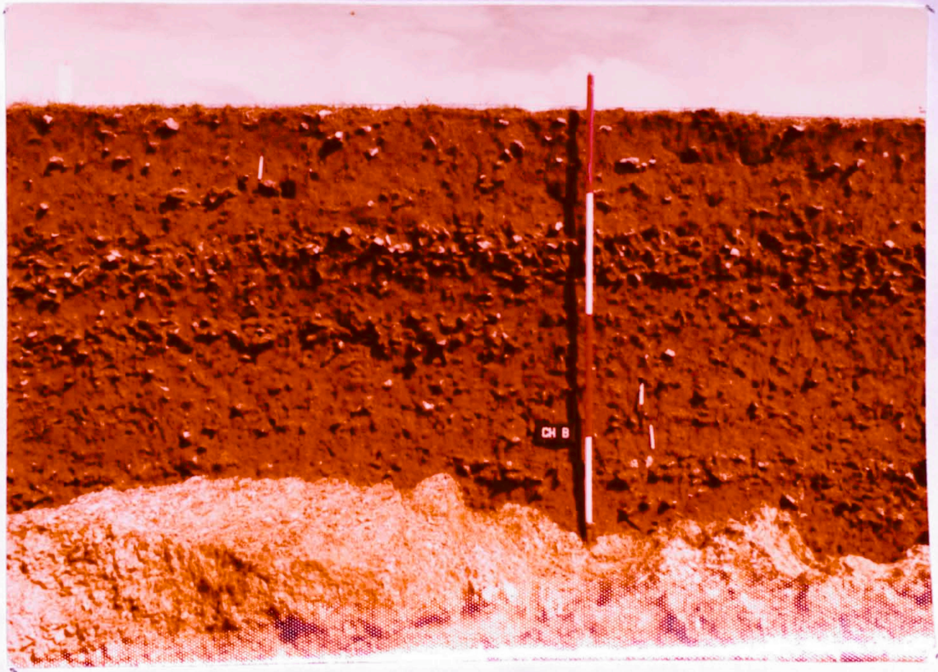


Plate LIII. Chalton, Trench b, the sediments between the valley centre and c. 4m. Scale 2m.

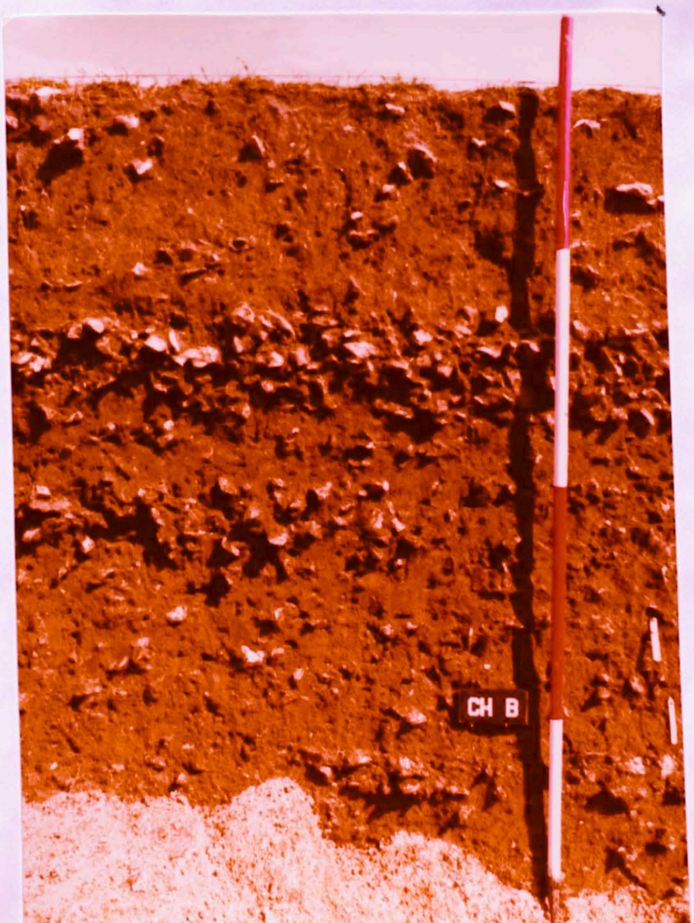


Plate LIV. Chalton, Trench b, detail of sediments near the valley centre. Scale 2m.

been discussed in relation to Kiln Combe (p. 121).

Layer 10. A layer of brown soil with scattered flints and a high proportion of small rounded chalk pieces: in other words a typical colluvial soil which one would expect to be laid down under an arable régime. The layer was a fairly uniform 40cm. deep for the length of the trench and contained a great many artifacts.

Layer 11. The present day topsoil, a layer of dark brown humic soil about 25cm. thick containing flint nodules and some chalk pieces. No sorting was in evidence because in the recent past this pasture field has periodically been cultivated.

(n) Dating using artifacts.

A total of 3,237 artifacts were three dimensionally recorded and have been divided into types according to the type list in Appendix 2. A summary of the numbers and proportions of each type present is given in Table XXII, and the distributions are plotted out graphically in Figures 64 - 71. In the case of diagnostic sherds, their artifact number is printed beside the type symbol on the distribution drawing and full details of each diagnostic sherd can be found in Appendix 5.

Flint Artifacts. (Fig.64).

These formed 16% of the total artifact assemblage, a very much smaller proportion than in the other valleys (48% Kiln Combe; 55% Itford Bottom). This in itself suggests either less activity hereabouts in the lithic periods or that less evidence has survived. Certainly what was found amounted to a rather unprepossessing collection including only 58 tools,

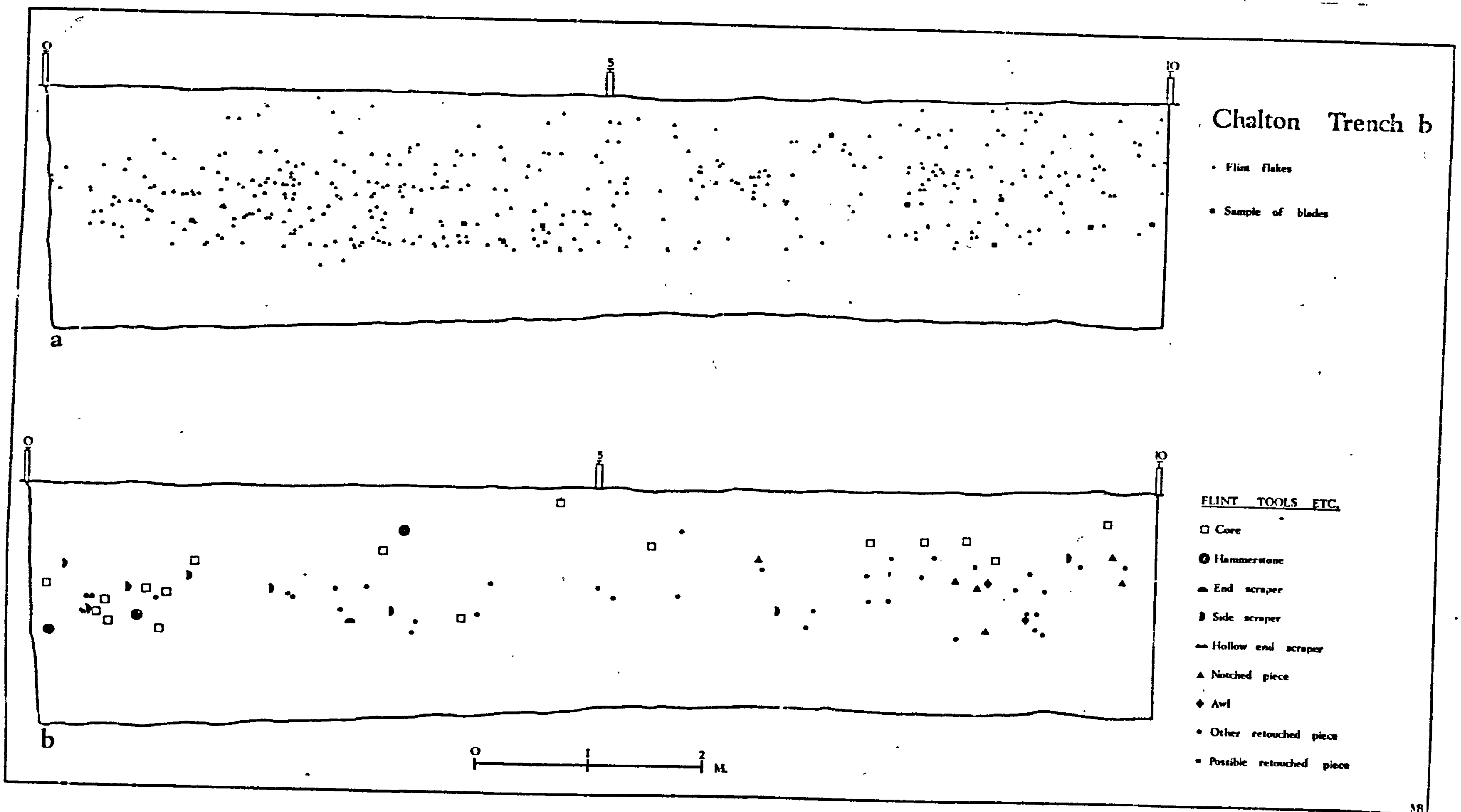


Fig.64. Chalton, Trench b. (a) Distribution of flint flakes. (b) Distribution of flint tools.

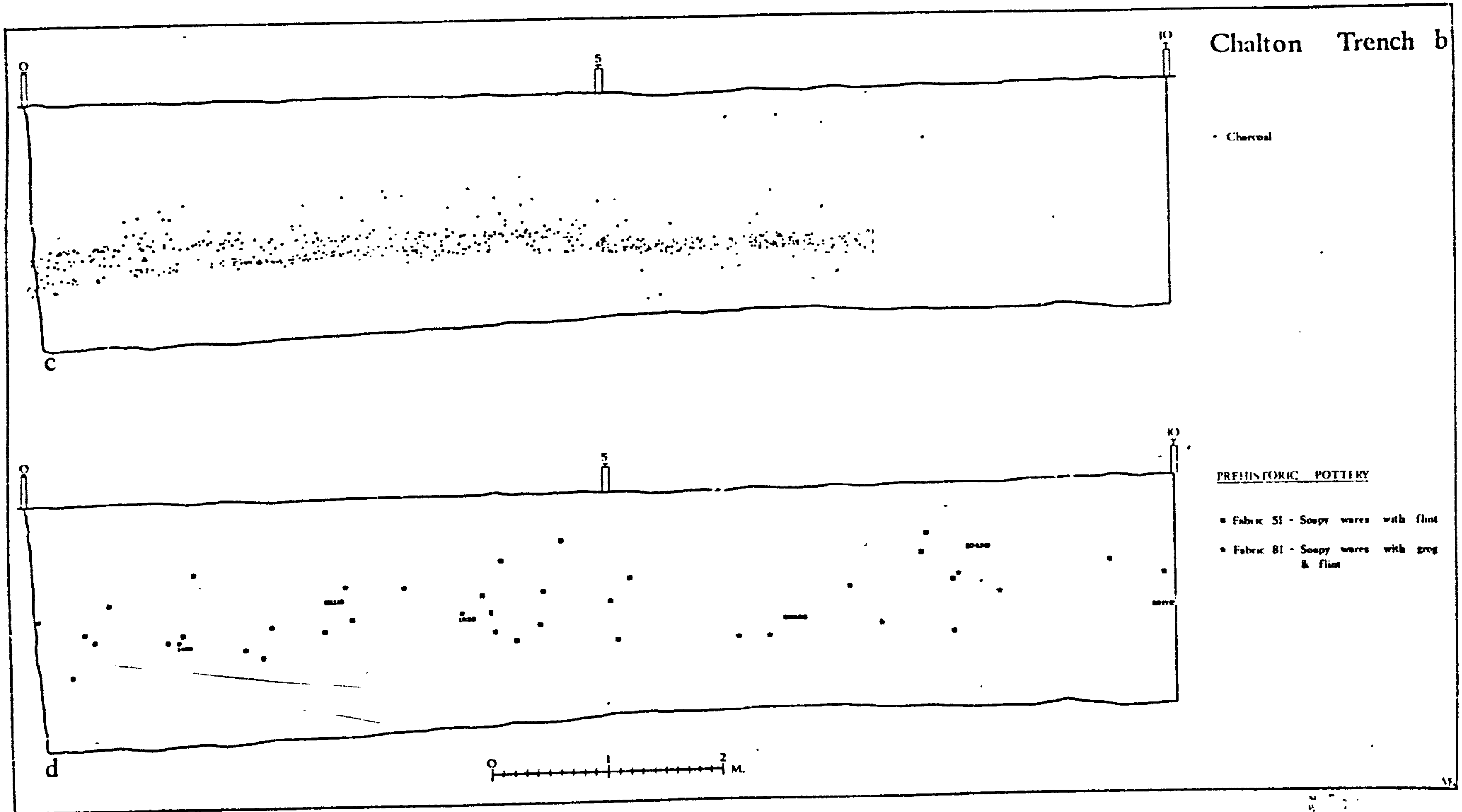


Fig.65. Chalton, Trench b. (c)Distribution of charcoals. (d) Distribution of prehistoric pottery of Fabrics 51 and 81.

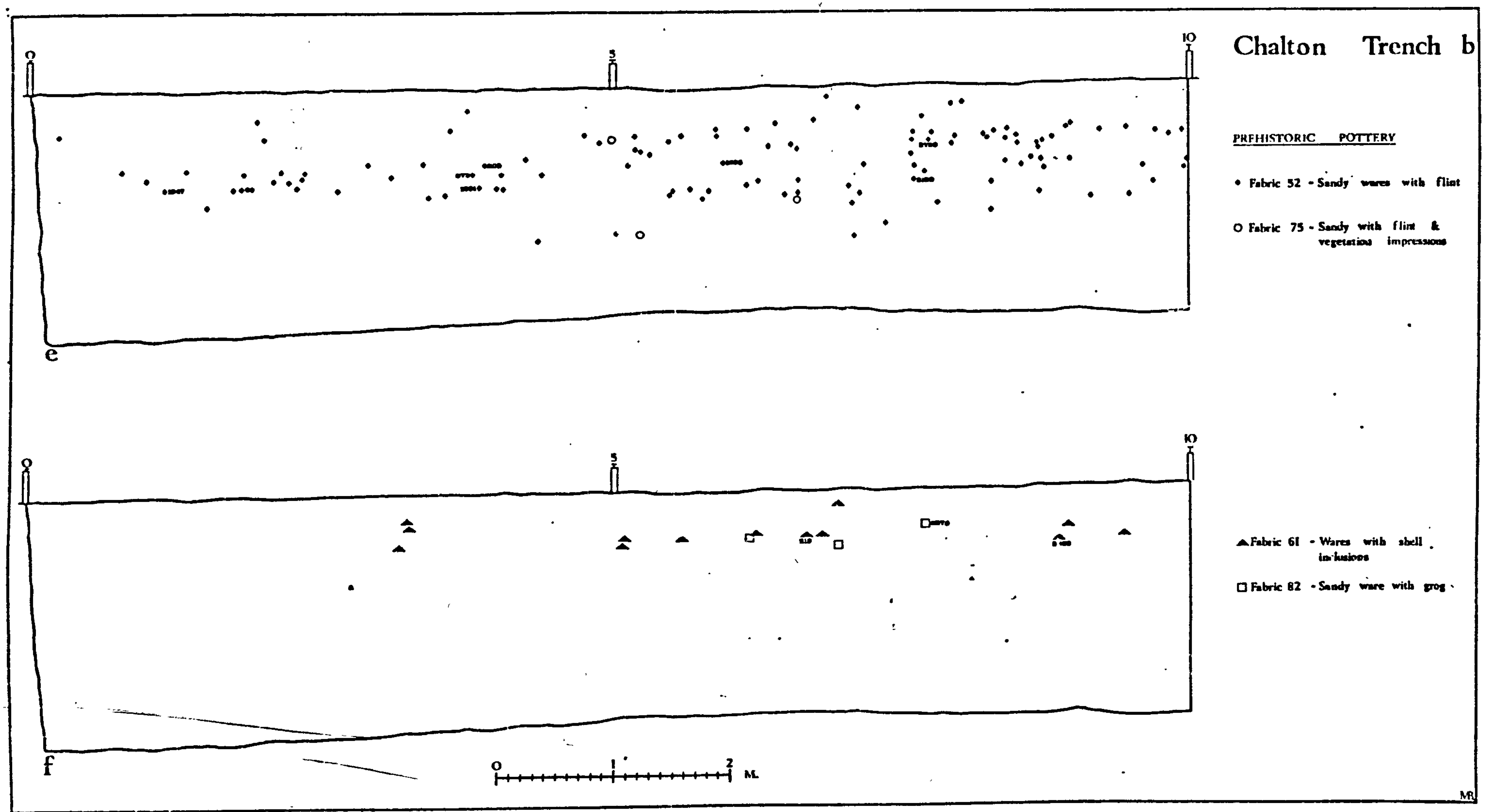


Fig.66. Chalton, Trench b. (e) Distribution of prehistoric pottery, Fabrics 52 and 75. (f) Distribution of Fabrics 61 and 82.

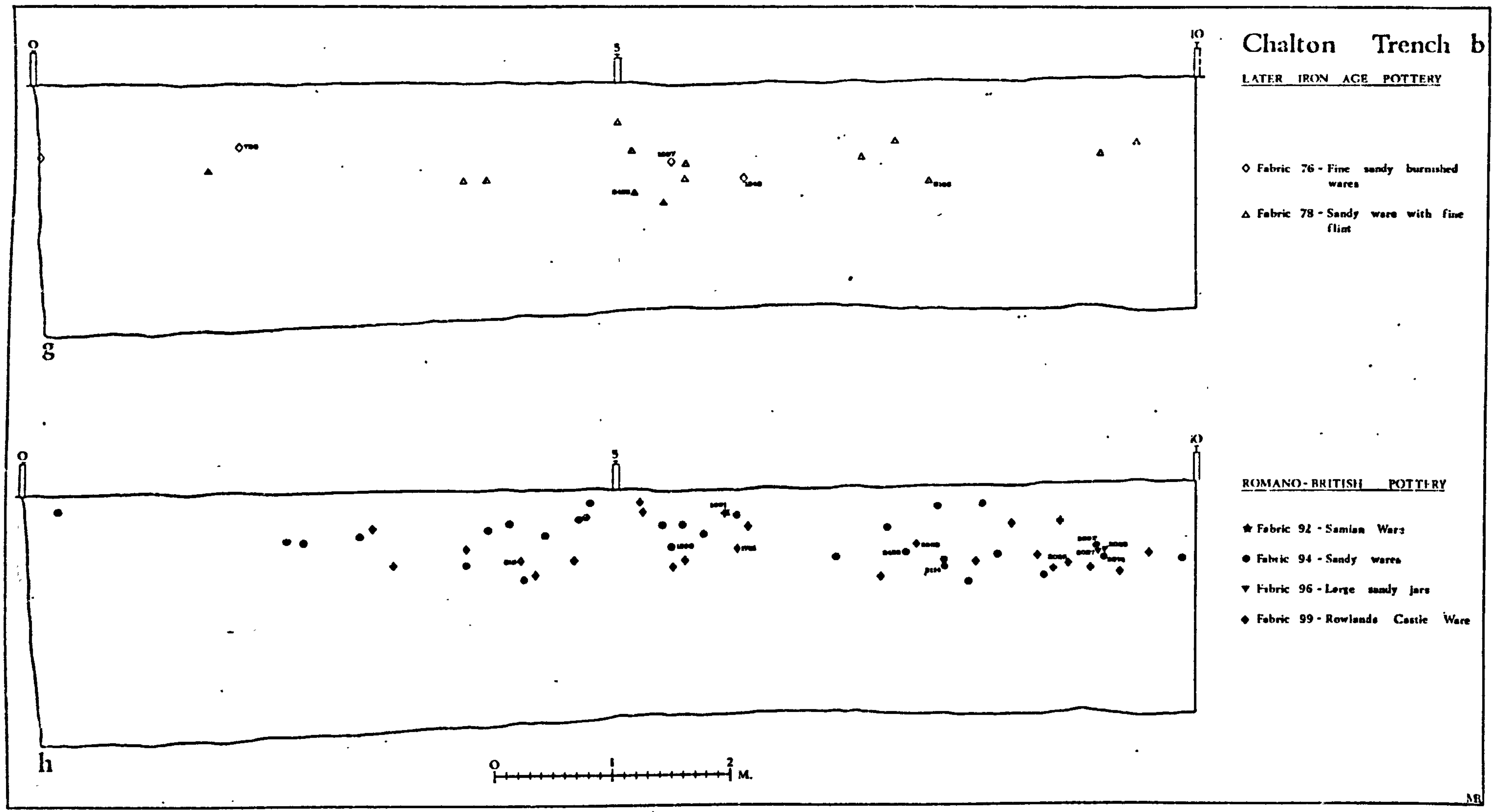


Fig.67. Chalton, Trench b. (g) Distribution of later Iron Age pottery fabrics. (h) Distribution of Romano-British fabrics.

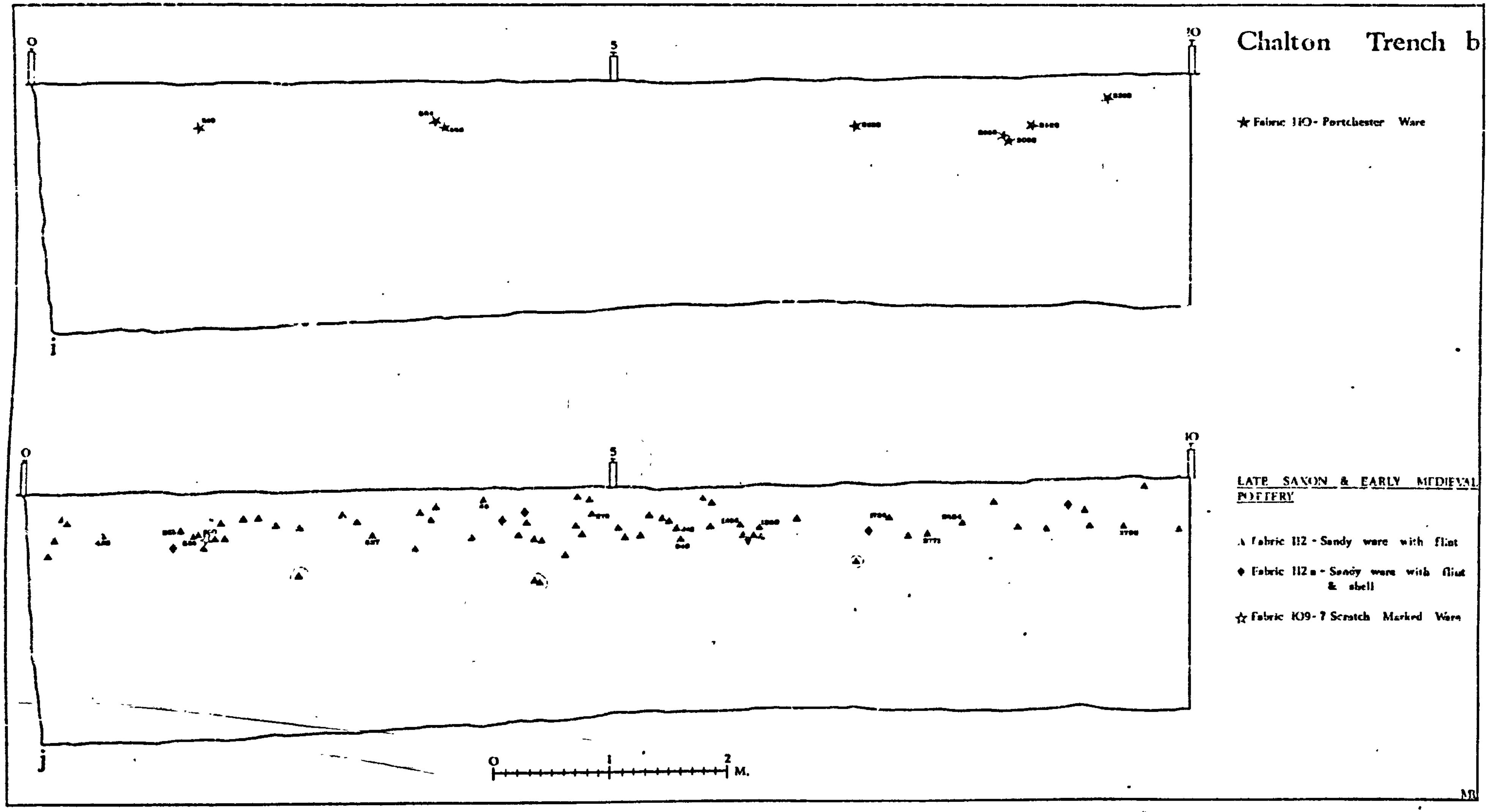


Fig.68. Chalton, Trench b. (i) Distribution of Fabric 110. (j) Distribution of late Saxon and early Medieval fabrics.

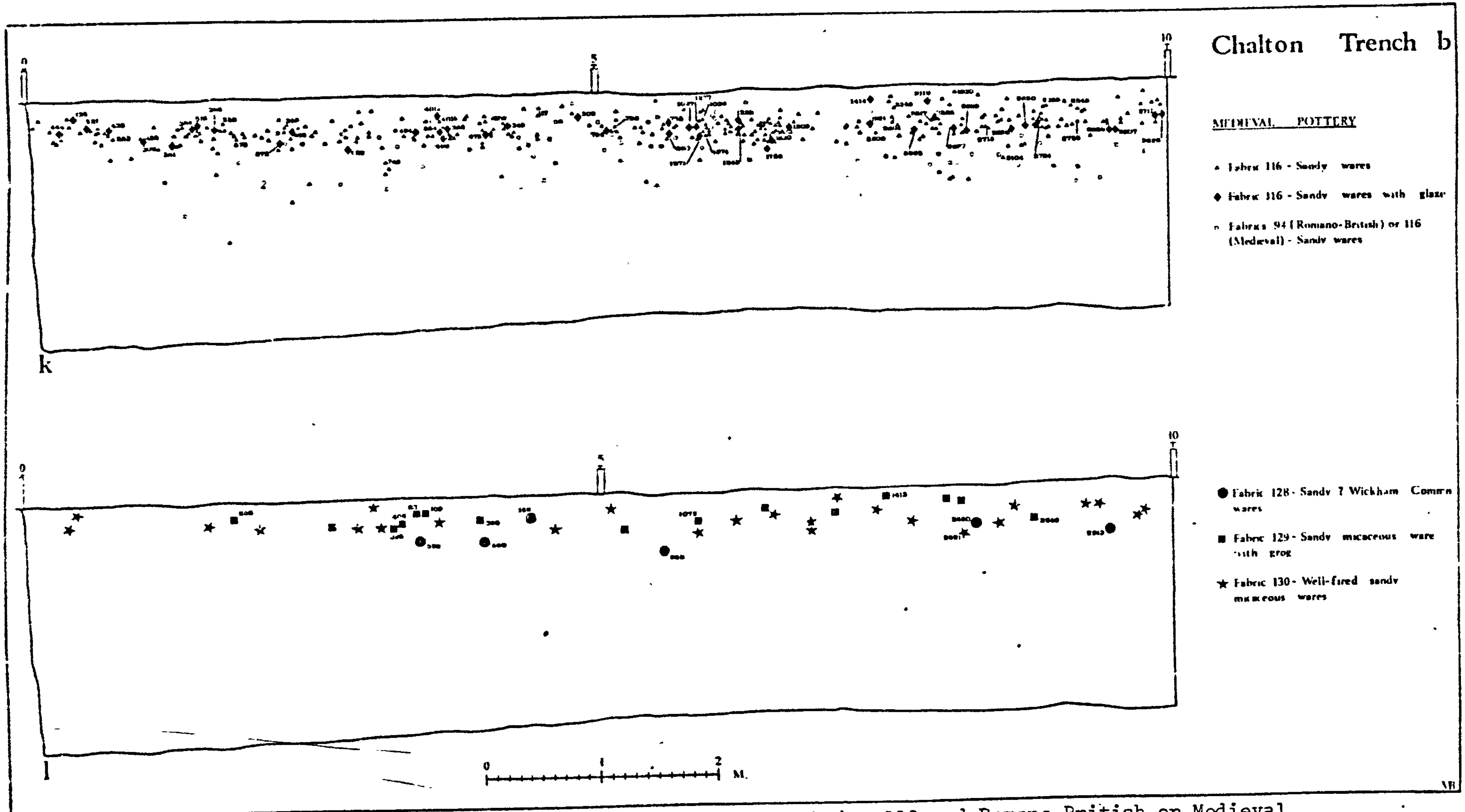


Fig.69. Chalton, Trench b. (k) Distribution of Medieval pottery, Fabric 116 and Romano-British or Medieval pottery, Fabrics 94/116. (l) Distribution of Medieval pottery, Fabrics 128-30.

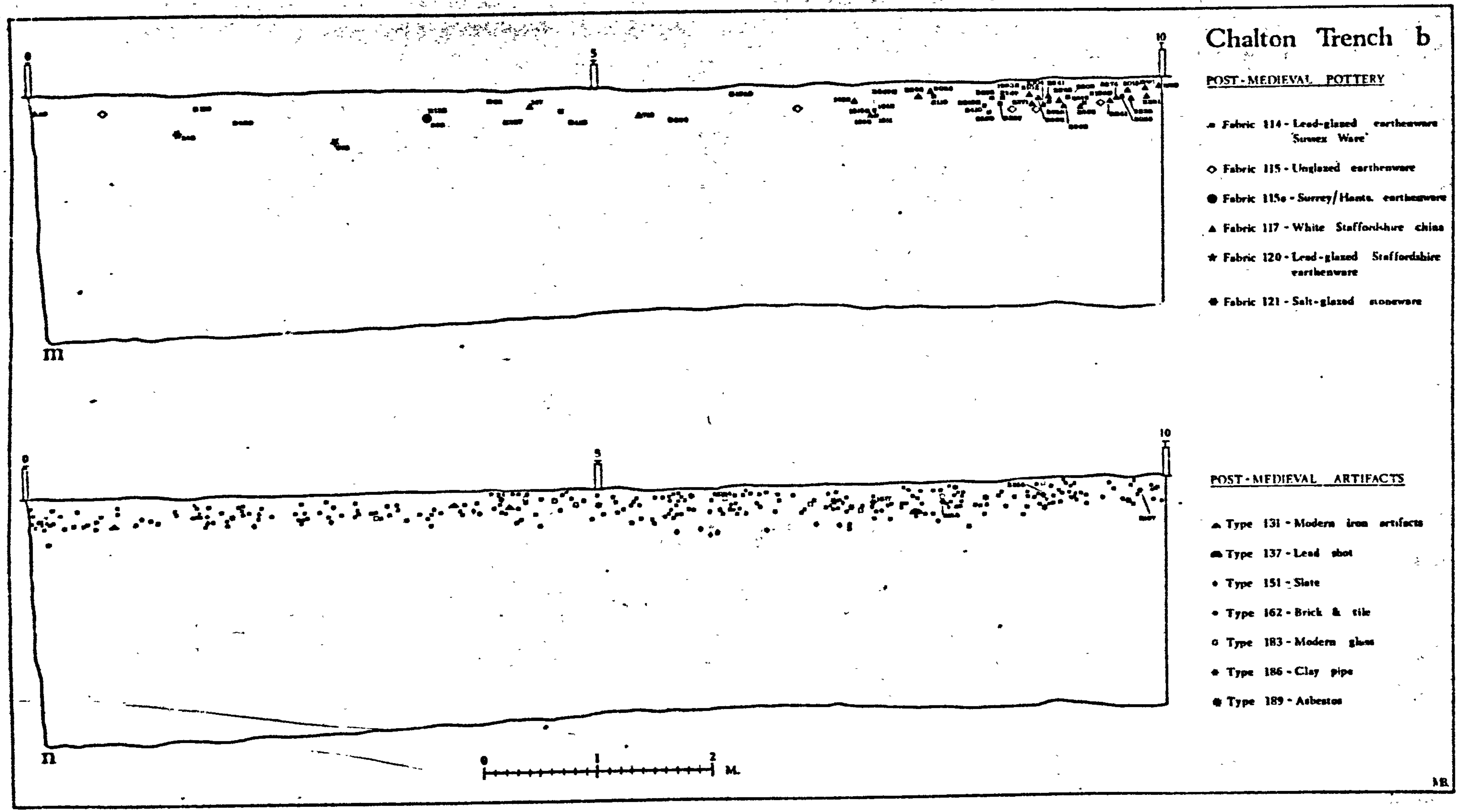


Fig.70. Chalton, Trench b. (m) Distribution of Post-Medieval pottery. (n) Distribution of Post-Medieval artifacts.

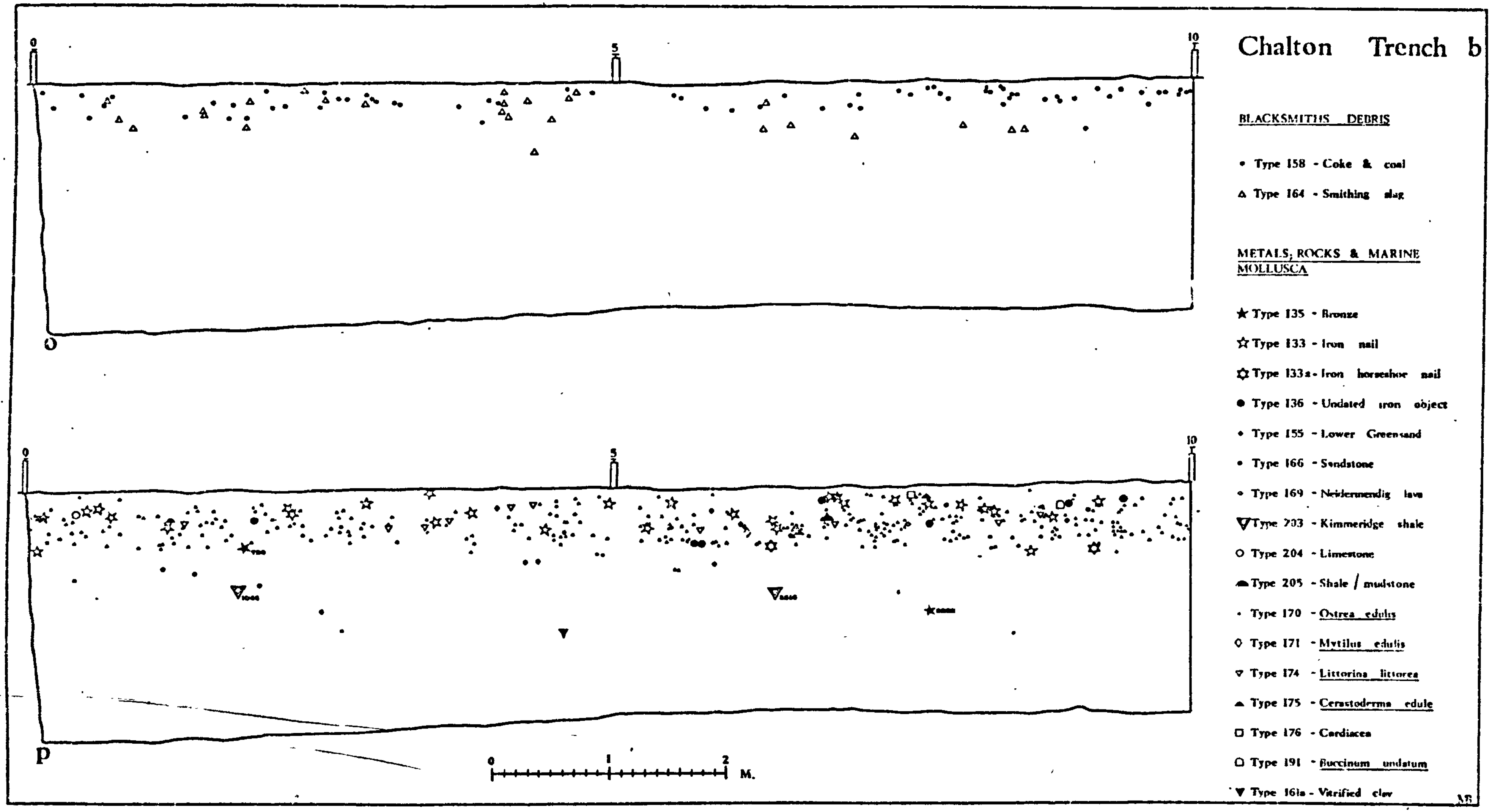


Fig.71. Chalton, Trench b. (o) Distribution of blacksmith's debris. (p) Distribution of metals, rocks and non-marine Mollusca.

Fig.72. Chalton, Trench b. Transparent sheet showing the stratigraphy in the hand excavated portion of the trench as an overlay for the distribution drawings. This is in a pocket at back of thesis.

	Type number	Artifact types	Numbers	% of total artifacts	% of pottery	Number of diagnostic Sherds	% of flint tools
Flint artifacts	1	Core	17	0.5			
	2	Hammerstone	7	0.22			
	3-5 & 7	Flint flakes	627	15.7			
	11	End scraper	4	0.1			7
	12	Side scraper	7	0.2			12
	14	Hollow end scraper	1	0.03			2
	15	Notched piece	5	0.16			9
	18	Awl	2	0.06			3
	47	Other retouched piece	38	1.22			66
	48	Possible retouched piece	1	0.03			2
	50	Possible utilised piece	1	0.03			
Prehistoric pottery	51	Soapy ware with calcined flint grits	38	1.22	4.09	4	
	52	Sandy ware with calcined flint grits	129	4.15	13.87	3	
	61	Shell filled wares	14	0.45	1.50	2	
	75	Sandy ware with calcined flint and vegetable inclusions	3	0.09	0.32	0	
	76	Fine sandy burnished wares	4	0.12	0.43	3	
	78	Sandy ware with fine flint	16	0.51	1.72	2	
	81	Soapy grey filled wares with flint grits	6	0.19	0.64	0	
	82	Pottery with a predominant filler of grog + calcined flint + sand	3	0.09	0.32	1	
Romano-British pottery	92	Samian ware	1	0.03	0.11	1	
	94	Sandy wares	29	0.99	3.11	5	
	96	Large sandy hand-made storage jars	2	0.06	0.21	2	
	99	Rowlands Castle ware	30	0.96	3.22	4	
Medieval and Post-Medieval Pottery	109	Scratched marked wares	1	0.03	0.11	1	
	110	Portchester ware	9	0.28	0.96	9	
	112	Sandy wares with multi-coloured flint grits	74	2.38	7.95	14	
	112a	Sandy ware with flint and shell	6	0.19	0.64	0	
	114	Lead glazed earthenware, generally Sussex ware	29	0.93	3.11	27	
	115	Post-Medieval earthenware	5	0.16	0.53	0	
	115a	Surrey Heaths earthenware	1	0.03	0.11	1	
	116	Sandy Medieval wares	382	12.29	41.07	80	
	94/116	Roman or Medieval sandy wares	71	2.28	7.63	1	
	117	White Staffordshire china	25	0.80	2.69	21	
	119	? Medieval tile	7	0.22	-	0	
	168/119	Tile	7	0.22	-	0	
	120	Lead glazed Staffordshire earthenware	2	0.06	0.21	1	
	121	Salt glazed German stone ware	1	0.03	0.11	1	
	128	White sandy wares often with olive green glaze	7	0.22	0.75	7	
	129	Micaceous sandy ware with grog filler	16	0.51	1.72	9	
	130	Late Medieval micaceous sandy ware	26	0.83	2.79	1	
Metal objects	131	Modern iron object	4	0.12			
	133	Iron nail	41	1.32			
	133a	Horse shoe nail	4	0.12			
	135	Bronze object	2	0.06			
	136	Iron object of uncertain date and function	9	0.29			
	137	Lead shot	1	0.03			
Plant remains	141	Charcoals	572	18.42			
	150	Woody roots	3	0.09			
Geological and building materials, Mollusca and other objects	151	Slate	21	0.67			
	155	Lower Greensand	13	0.41			
	158	Coke and coal	78	2.51			
	159	Fossil	5	0.16			
	161	Daub	59	1.90			
	161a	Vitrified clay	1	0.03			
	162	Post-Medieval brick and tile	265	8.53			
	164	Smithing slag	27	0.86			
	165	Pyrites	10	0.32			
	166	Sandstone	6	0.19			
	168	Tile, possibly Roman	33	1.06			
	169	Mayen lava	1	0.03			
	170	[illegible] sp	319	10.27			
	171	Mytilus edulis	1	0.03			
	174	Littorina littorea	16	0.51			
	175	Cerastoderma edule	3	0.09			
	176	Cardiacea	1	0.03			
	179	[illegible]	6	0.19			
	181	Bone and teeth	116	3.73			
	183	Modern glass	6	0.19			
	186	Clay pipe	17	0.54			
	188	Green glass - Medieval or early Post-Medieval	3	0.09			
	189	Asbestos	1	0.03			
	191	[illegible]	2	0.06			
	203	Kimmeridge Shale	2	0.06			
	204	Limestone	2	0.06			
	[illegible]	Shale / mudstone	1	0.03			
Flint artifacts total			[illegible]	[illegible]			
Flint tools total			57	1.27			
Pottery total			930	29.95			
Total diagnostic sherds			-	6.56		206	
Grand total of artifacts			6105	-			
Total non-artefactual pieces (misidentified in excavation)			[illegible]	-			
Total artifacts 3-D recorded (more than one artifact in a few cases)			3213	-			

Table XXII. The numbers and proportions of artifact types in Chalton, Trench b.

the majority of these not recognisable tool types and classified as 'other retouched pieces'. The main recognisable tool types were simple scrapers which would not be out of place in Neolithic to Bronze Age contexts. The generally crude nature of the flint-work and the paucity of tool types, other than scrapers, might imply that much of this material belongs to the latter part of this range.

The only very obvious exceptions to this are a handful of blades, an artifact category not specifically recorded as distinct from flakes. A sample of these were examined by Dr. Roger Jacobi who suggests that as a group they are liable to be early Neolithic. The examples in question have been marked by rectangular boxes on Fig.64, and it can be seen that they derive mainly from the basal layers.

Of the other flakes one or two were found securely stratified in Layer 3, but the majority were distributed in the overlying colluvial layers. There was just a hint of horizonation near the base at the junction between Layers 4 and 5. Above this the distribution of flakes and tools is fairly even in Layers 5 to 9, but there is some tendency for the numbers to drop off in Layers 10 and 11.

Prehistoric Pottery.

Soapy wares with calcined flint inclusions - Fabric 51.

Fairly crudely finished and poorly fired prehistoric sherds with a predominant filler of large fragments of calcined flint, the proportion of which is fairly variable. The fabric has a soft soapy feel, due largely to the near absence of sand grade material and to the presence of grog in some sherds. Sherd 3043 is certainly later Neolithic and has been identified by Dr. I. Longworth as Peterborough Ware probably of Mortlake type. Two other diagnostic sherds (3217 and 1118) seem to be very much later since Professor Cunliffe considers them probably Iron Age in the range third to second centuries B.C.

Soapy grog filled sherds with a few calcined flint grits - Fabric 81.

A fine, thin, red/orange soapy fabric with virtually no sand and a predominant filler of grog, as well as a small amount of medium sized calcined flint grit. No diagnostic sherds were present but similar fabrics in the other valleys, and elsewhere on the South Downs, were used to produce Beaker/early Bronze Age vessels.

Sandy wares with coarse calcined flint inclusions - Fabric 52.

Fairly thick and crudely finished hand-made wares with a predominant filler of quartz sand and a subsidiary filler of medium and coarse calcined flint. Flint gritted wares of this type were present on the middle Bronze Age site 78 (Cunliffe 1970a, p.7), and they appear to be common up to about the fourth century B.C. (Cunliffe 1973, p.180). Professor Cunliffe has examined the diagnostic sherds and considers 3180, with possible fingernail impressions, to be late second or early first millennium. Three sherds (1031, 1047 and 1074) he considers to belong to the first half of the first millennium, and the first of these has fingernail decoration on the rim well paralleled on early Iron Age site 50 (Cunliffe 1976, Fig.31.6). Sherd 1896 he considers to be the local 'Saucepan pot' tradition of the third to second centuries B.C.

Sandy ware with calcined flint and vegetable inclusions - Fabric 75.

Fabric with a predominant filler of fine and medium quartz sand, a small proportion of calcined flint and abundant inclusions of vegetable material. None of the sherds was diagnostic.

Fine sandy burnished wares - Fabric 76.

The only obvious inclusions in this fabric was medium to fine quartz sand. It was used to produce well fired and finished wares with a black burnished surface. The fabric and the three diagnostic sherds are consistent with a date in the range c. 50 B.C. to A.D. 50.

Sandy wares with fine calcined flint inclusions - Fabric 78.

Sherds with a predominant filler of medium and coarse sand grade material with an additional filler of fairly fine calcined flint present in variable proportions, and a small amount of grog in some sherds. The sherds are thin with black, well fired and finished smooth surfaces, and it is these features which distinguish it from Fabric 52. Broadly speaking these sherds are Iron Age: 3166 is later Iron Age in the same date range as Fabric 76, whilst Professor Cunliffe suggests that 2498 belongs to the mid first millennium B.C.

Sandy ware with grog - Fabric 82.

Sherds with a predominant filler of grog but fairly large proportions of both calcined flint and sand grade material. The one diagnostic sherd (2578) could be late Iron Age or early Roman, but the distribution of the three sherds would be equally consistent with a later date.

<u>The distribution of prehistoric pottery</u> (Figs. 65d-67g).

The only types present as low as the base of Layer 4 were Fabrics 51 and 81, and of these 35 out of 44 came from this layer or Layer 5. Unfortunately few of the sherds in these layers are diagnostic but it is probably reasonable to conclude that, with the possible exception of sherd 3217, the pottery tends to suggest a Bronze Age or early Iron Age date for the deposition of Layers 4 and 5. The one Peterborough Ware sherd, which clearly represents much earlier activity, is an anomaly because it is one of only three pieces of Fabric 51 which were found as high as Layer 9. The interesting thing was that the decoration on this sherd was fresh and undamaged, evidently it had not been lying around on the fields since Neolithic times, and a likely explanation is that it had been dug up probably from a feature (? during marling operations) at a much later date, probably in Roman or Medieval times. As it happens, the origin of this sherd is of some importance, it is the only Neolithic sherd recorded during this study, and the only piece of Neolithic pottery to derive from the Chalton Field survey. The chances of Neolithic material surviving (a) soil erosion, (b) plough disintegration of the sherds would seem to be slim.

Fabric 52 tended to be found higher in the stratigraphy than Fabric 51, 4 sherds were found quite near the base of Layer 5, but it was more common near the top of this layer and most of the sherds came from Layer 8 and above, but within that band there was no very clear horizontal concentration.

As regards the later Iron Age fabric types, one of the most diagnostic sherds (1346) was securely stratified in Layer 7 (on the opposite side of the trench where this layer was clearer - its position has been transposed across the trench). In fact the distribution of these fabrics does seem to concentrate around Layer 7; one or two sherds were present marginally lower, and a number were present in later layers. In the field the hypothesis was evolved that Layer 7 might represent a stand-still horizon c. the late Iron Age and this is something we can check against the distribution of later artifact types.

Romano-British Pottery.

Samian Ware - Fabric 92.

A single sherd from a bowl of ? Central Gaulish manufacture in the second century A.D.: 1091.

Sandy Wares - Fabric 94.

Wheel made fabrics well-fired and finished with a predominant filler of fine and medium sand and a few other inclusions, thin sherds generally grey in colour. The datable diagnostic sherds are of first and second century date according to Mr. C. M. Green.

Large sandy, hand-made storage jars - Fabric 96.

A fabric with a predominant filler of fine sand and a small proportion of grog, shell and sandstone used to produce thick vessels with finger drag marks on the interior. Such vessels are found widely in Roman contexts on the South Downs and were probably used for some specific purpose such as corn storage. They are unlikely to have been derived from a single source but examples have been found 16km. away in association with a kiln of the late first century (Cunliffe 1961).

Rowlands Castle Ware - Fabric 99.

A hard fired, generally light grey ware with a predominant filler of very evenly sized quartz sand; occasionally there is a thin orange surface slip which would have been obtained from iron rich clay. The kilns from which this pottery seems to have come are only 5.5km. south of the trench and were in production between the late first and late third centuries during which time they supplied the bulk of pottery in use in the Chalton area (Cunliffe 1973, p.182).

The distribution of Romano-British pottery (Fig.67h).

This distribution provides a reasonable terminus ante quem for some of the basal deposits and clears up a number of problems posed by some rather anomalous prehistoric distributions. The lowest layer in which Romano-British material occurred was c. Layer 7. From this we can deduce that the underlying Layers 4-6 are pre-Roman, and on the data presented above a Bronze Age/earlier Iron Age date seems probable. It may be significant that Romano-British pottery was not actually found in the well stratified and sealed part of Layer 7, but a number of pieces were found where its line was blurred and indistinct between 3 and 10m. Could it be, therefore, that Layer 7 represents a stable land surface of the later Iron Age which was disturbed by cultivation upslope from 3m. during the Roman period? This would also explain the otherwise very puzzling absence of Romano-British sherds from the valley centre part of the trench, if cultivation in that period ceased just short of the centre.

Saxon and Medieval Pottery.

Portchester Ware - Fabric 110.

A sandy fabric with even sized flint grits and a small proportion of grog inclusions. The vessels are wheel-turned and well fired, generally with a grey surface. The fabric has been fully described by Cunliffe (1970, pp.75-7; 1976, pp.187-189) who has examined the sherds from this trench. Diagnostic sherds include distinctive rims with interior undercutting, deep rilling on the body and rouletting. The fabric is of late Saxon date and its production centres on the first half of the eleventh century but had ceased by c. 1100 A.D. Sherds have previously been found around Chalton village including the same field as the present trench, at a time when it was under cultivation.

? Scratch Marked Ware - Fabric 109.

Single body sherd of fine sandy micaceous ware with scratch marked surface, which Anthony Streeten has suggested is possibly Scratch Marked Ware produced in Central Southern England in the twelfth and thirteenth centuries A.D.

Sandy Medieval fabric with flint inclusions - Fabric 112.

Fabrics with a predominant filler of medium and fine sand with a proportion of angular multi-coloured flint and sometimes grog. Most vessels seem to have been hand made but a proportion were wheel finished. These fabrics are not closely dated, they occur in Saxo-Norman contexts but they are common at Portchester until about the fourteenth century (Cunliffe 1977, p.133). Most of the diagnostic sherds are likely to be c. twelfth century.

Sandy ware with flint and shell - Fabric 112a.

Basically the same as the above fabric but with inclusions of shell. The vessels are crudely made and though none was diagnostic they are likely to be late Saxon/early Medieval.

Wares with shell inclusions - Fabric 61.

Sherds of moderately crude pottery with a predominant filler of shell and sometimes containing a proportion of quartz sand and calcined flint. The two diagnostic sherds were of little value in dating the fabric and it was originally assumed to be prehistoric. However, when the distribution was plotted out (Fig.66f) it was found to be confined to Layers 9 and 10 which argues for an Anglo-Saxon or Medieval date.

Sandy Medieval Wares - Fabric 116.

Hard fired, wheel thrown vessels of variable colour but most commonly pinky/orange. Quartz sand of medium to small grade is the only filler and a good proportion of the sherds (13%) have traces of a clear glaze. The 76 diagnostic sherds include sagging bases and glazed jugs with thumbed bases and incised horizontal grooving - features which are commonplace among the early West Sussex Wares of c. mid-thirteenth to mid-fourteenth century date (Cunliffe 1973b, p.47). The basic types of bowl with jar rim are also regarded by Anthony Streeten as types occurring in thirteenth and fourteenth century contexts at Portchester (Cunliffe 1977, p.170).

Sandy Wares of Romano-British or Medieval date - Fabric 94/116.

In both Romano-British and Medieval times the bulk of the pottery was well made, sandy ware. Much of it probably derived from the Tertiary clays just south of the Chalk and the probability of this common origin creates difficulties in distinguishing Roman from Medieval material. An intermediate category was therefore created for material too small or worn for a confident attribution of date.

Sandy ?Wickham Common Wares - Fabric 128.

This has a predominant filler of fine quartz sand with black specks. The body is off white with a bright olive green glaze and the vessels are well fired, wheel made and quite homogeneous. Vessels of this type occur in thirteenth and fourteenth century contexts at Portchester (Cunliffe 1977, p.136) and Anthony Streeten suggests that these Chalton examples possibly derive from the Wickham Common Kilns, near Fareham.

Sandy micaceous ware with grog - Fabric 129.

A soft pink fabric with a filler of brick-red small grog pieces, and a similar proportion of medium/fine quartz sand containing mica. The vessels are wheel-made and well finished. The combination of grog and mica is found in wares from the Graffham Kilns, according to Anthony Streeten, who suggests these sherds are likely to be fourteenth century.

Well fired sandy micaceous ware - Fabric 130.

Similar to Fabric 129 but harder fired and with a less conspicuous grog filler. Probably also derived from Graffham.

The distribution of Saxon and Medieval pottery (Figs.68i-69l).

Grass tempered pottery of the type found in the Church Down settlement was absent here, although sherds have been found elsewhere in Chalton village. Other early and middle Saxon fabrics from among the reportedly 'wide range' at Church Down (Champion 1977, p.369) may not have been recognised here but it does seem likely that intensive land-use at this particular spot commenced late in the Saxon period. The greater part of the Medieval pottery dates to the thirteenth and fourteenth centuries. Late West Sussex Wares, generally datable to the mid-fourteenth to the mid-fifteenth century and present at Church Farm, Chalton (Cunliffe 1973b, p.45) seem to be largely absent here. Rather than assuming particularly intense manuring of this field in the thirteenth and fourteenth centuries it seems more plausible that during that period settlement extended into the fringe of the field from which this sediment was derived.

The late Saxon sherds (Fabric 110 and possibly some of Fabric 112) were found mainly in layers which produced quantities of later Medieval material. Probably they were reworked because Medieval cultivation was obviously intensive and probably quite deep by comparison with prehistoric and Roman techniques. The quantity of Medieval pottery is large, and the gross picture it presents clear enough: the vast majority of Fabric 116 and all of Fabrics 128-130 derives from Layers 9 and 10. Eleven sherds of Fabric 116 were, however, found in Layer 8, and there were even a few sherds in underlying horizons. In view of the quantity of material, and its otherwise fairly clear horizonation, it is felt that these pieces can be discounted as the result of either misidentification (e.g., confusion between Roman and Medieval fabrics) or the results of burrowing animals. If this is accepted then we can conclude that Layer 9 alone represents the intensively cultivated arable of the late Saxon and Medieval periods.

Post-Medieval Pottery.

Lead glazed earthenware 'Sussex Ware' - Fabric 114.

Lead glazed earthenware generally known as Sussex Ware, these pieces are probably eighteenth or early nineteenth century.

Unglazed earthenware - Fabric 115.

Date and origin as above.

Surrey/Hants earthenware - Fabric 115a.

Single sherd (202) of white earthenware with pale yellow glaze, Surrey/Hampshire ware probably seventeenth century.

White Staffordshire china - Fabric 117.

White china, most of it of nineteenth century date, some twentieth century derived mainly from the Staffordshire Potteries but similar material was produced by the other industrial centres.

Lead-glazed Staffordshire earthenware - Fabric 120.

Single sherd (678) probably from a nineteenth century teapot.

Salt-glazed Stoneware - Fabric 121.

Single sherd (248) probably of seventeenth or eighteenth century German manufacture.

The distribution of Post-Medieval artifacts (Figs.70 and 71o)

The paucity of material from both the late Medieval and early Post-Medieval periods (sixteenth and seventeenth centuries) is noteworthy. Virtually all of the Post-Medieval pottery comes from the present top soil (Layer 10), the only sherd found at depth in Layer 9 (678) seeming certain to be an intrusion. This confirms the, largely early, Medieval date of the colluvial Layer 9, and further support for this basic sequence comes from the distribution of other types of Medieval artifact. Fragments of slate and brick/tile did occur in the upper part of the Medieval layer but both slate and tile were extensively used in the Medieval period. Blacksmiths' debris presents a more interesting picture because whilst coke and coal was almost entirely confined to Layer 10, smithing slag was present in Layer 9 in significant quantities. A smithy is known to have existed on Chalton Lane just opposite the pond in Post-Medieval times, and we may presume that slag from this was spread as fertiliser. The distributions suggest that smithing activities go back to the Medieval period.

<u>The distribution of metals, rocks and marine Mollusca</u> (Fig.71p).

The majority of the various other types of artifacts listed on Fig.71p are likely to have arrived on the land in manure or from the erosion of occupation levels uphill. Nearly all this material came from Medieval layers, but there are some interesting exceptions. A simple bronze finger ring (3236) came from Layer 5, and although simple rings of this kind are basically undatable they do occur in Bronze Age contexts (S. Needham pers. comm.) and, interestingly enough, a very similar ring was found in a late Iron Age context at Site 15, only 1km. to the north west (Cunliffe 1976a, Fig.30.4). The horizon in which it was found was perfectly consistent with a Bronze Age or Iron Age date, Two fragments of Kimmeridge Shale were also found (1044, 2516), they were not finished artifacts but had curved edges, which did not appear to be simply natural fractures, and are similar to the bracelet blanks from the Kimmeridge area. This shale occurs fairly extensively in Iron Age and Roman contexts in southern

England, but these two pieces are from pre-Roman layers which produced fragments of late Iron Age pottery.

(o) The sample columns.

Analytical studies were confined to one column at 10.65m. - 10.85m. (Fig.63).

Layer No. (and depth)	Description.
10 (0 - 22cm)	Dark brown (7.5YR 3/2) silt loam with common medium and small flint nodules and very small chalk pieces; medium granular peds, abundant very fine roots; clear wavy boundary; pH 6.7.
9 (22 - 62cm)	Dark yellowish brown (10YR 4/4) silt loam with many large medium and small flint pieces and very small chalk pieces; subangular blocky peds; common very fine roots; clear wavy boundary; pH 7.4.
8 (62 - 85cm)	Dark brown (7.5YR 4/4) silt loam with abundant medium and small flint nodules and common very small chalk pieces; subangular blocky structure; gradual wavy boundary; pH.7.
7a (85 - 105cm)	Dark brown (7.5YR 4/4) silt loam with very few medium stones and no chalk pieces except in earthworm burrows; subangular blocky structure; clear smooth boundary; pH.6.8.
5 (105 - 135cm)	Dark brown (7.5YR 4/4) silty clay loam with common medium and small flint nodules and no

Sample	Layer	Munsell designation (moist)	pH (CaCl2)	ppm alkali soluble o.m.	% acid soluble	Particle size %			
						>6mm	2-6 mm	0.5-2mm	<0.5 mm
0-5 cm	10	7.5 YR 3/2	6.7	1696	29	9.7	0.5	1.7	88.0
15-18 cm			6.7	872		11.4	1.9	2.9	83.8
18-22 cm	9	10YR 4/4	6.9			7.9	3.3	3.0	85.7
30-35 cm			7.4	368	33.8	7.3	3.8	2.2	86.6
40-45 cm			7.5			11.7	3.4	2.3	82.5
50-55 cm			7.2	280	27.2	6.6	3.7	2.3	87.4
58-62 cm			6.9			26.5	2.9	1.3	69.1
62-65 cm	8	7.5 YR 4/4	7	216	22.8	26.2	2.9	1.5	69.4
70-75 cm			7			18.3	4.7	1.7	75.2
80-85 cm			7			9.6	4.7	1.5	84.1
85-90 cm	7a	7.5 YR 4/4	7.3		17.4	4.7	3.4	1.1	90.7
90-95 cm			6.6			18.8	3.1	0.9	77.0
95-100 cm			6.7	214	12.0	7.9	2.6	0.8	88.7
110-120 cm	5	7.5 YR 4/4	6.9	152	9.6	7.3	1.8	0.5	90.4
130-135 cm			7	128	11	21.5	3.7	0.4	74.2
135-138 cm	3b	7.5 YR 4/6	7.3	120	9.6	24.9	1.4	0.4	73.3
145-153 cm	3a	7.5 YR 4/6	7.2	96	8.6	6.8	0.6	0.3	92.2
153-158 cm			7.2	60	17.2				
158-200+ cm	1b	10YR 7/6	7.2	16	73	6.1	20.0	7.5	66.4
Bulk sample 13						21.4	12.0	4.5	62.1
Bulk sample 14						9.5	14.6	3.2	72.5

Table XXIII. Chalton, Trench b, soil analytical data.

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	chalk pieces; subangular blocky to prismatic structure; clear smooth boundary; pH.7.
3b (135 - 138cm)	Strong brown (7.5YR 4/6) ? silt loam with abundant large medium and small flints, no chalk pieces; subangular blocky to prismatic structure; clear smooth boundary; pH.7.3.
3a (138 - 158cm)	Strong brown (7.5YR 4/6) silty clay loam with few flints and no chalk pieces; subangular blocky to prismatic structure; clear wavy boundary; pH.7.2.
1b (158 - 200 + cm)	Yellow (10YR 7/6) marl with abundant small and medium white (10YR 8/2) chalk pieces; pH.7.2.

(p) Soil tests.

Particle size analysis (Tables XXIII and XXIV, Fig.73).

Particle size composition was assessed on the basis of coarse fractions in a 1 kg. sieved sample used for mollusc analysis, and for fractions below 2mm., sieve and sedimentation analysis of a 40 g. sample. The results show that the Pleistocene chalk deposits, Layer 1b, contain a much larger proportion of material between 2mm. and 6mm. and more sand than the overlying deposits. Within the Postglacial sequence there are two main stone accumulation horizons: one corresponded to Layer 3b and the base of Layer 5, the other is a steady increase in the proportion of larger flints towards the surface of Layer 8. Above this there is a sharp decrease, then a fairly uniform level in the Medieval colluvium up to the present day soil, perhaps serving to emphasise

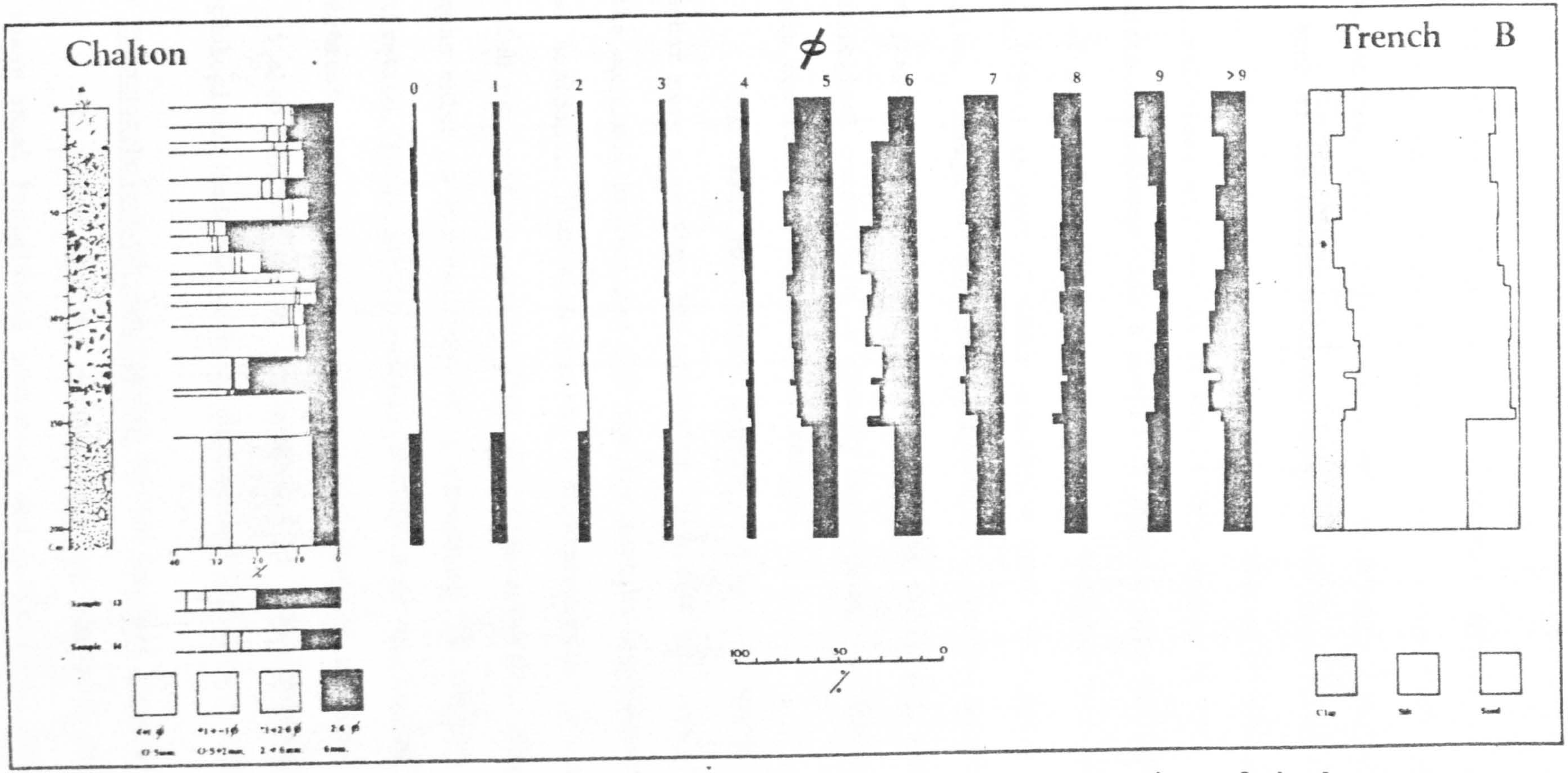

Fig. 73. Particle size analysis of Chalton, Trench b. On the left are the proportions of the larger fractions in a 1 kg. sample. In the centre are the results of sieve and sedimentation analysis of a 40 gm sample of material smaller than 2mm (-1 Ø). On the right is a summary diagram showing the fluctuating proportions of clay, silt and sand in the 40 gm sample.

the essential continuity of land-use over this period.

All the Postglacial layers contain a high proportion of, largely coarse, silt. This accords well with the other valleys where much of the eroded sediment appeared to be of loessic origin. Although this probability has not been confirmed here by mineralogical studies, as it was at Kiln Combe, it is a fortunate coincidence that a sample of topsoil from the north slope of Church Down (SU 7315, Fig.50) was analysed by Perrin et al. (1974) as part of their pioneering study of aeolian deposits. Though the analysis (Table XXV) is not as detailed as those prepared by Dr. Catt, and presented in Table VII, the mineralogical composition is closely comparable, confirming the loessic contribution to soils at Chalton.

The basal Postglacial layers such as 3 do contain somewhat more clay than the overlying colluvium but this may not be the complete explanation for the distinctive appearance of these basal horizons. They also contain a high proportion of silt, some of which may possibly result from silt translocation. This is a process which is increasingly being recognised as occurring under cultivation, it is partly responsible for what the United States Department of Agriculture (1975, p.27) describes as agric horizons and it also contributes to the formation of distinctive micro-morphological features known as agricutans (Jongerius 1970, p.320).

(q) Micromorphological examination by Dr. Richard Macphail.

In order to throw further light on the mode of formation of these basal Postglacial horizons, and indirectly, perhaps, on the similar layers encountered in the other valleys, a limited

Layer	Depth	Ø												
		Sand					Silt					% clay	% total Silt	% total Sand
		0	+1	+2	+3	+4	+5	+6	+7	+8	+9	>9		
10	0-5 cm	1·2	2·4	2·3	1·7	2·6	17·16	12·5	16	13	14	17	73·16	10·2
9	30-35 cm	2·8	3	1·8	1·8	4	21	21	15	10	8	11	75	13·4
9	50-55 cm	1·6	1·7	1·3	1·3	3·2	24	21·2	16·2	10	4	15	75·4	9·1
8	62-65 cm	2	2	1·2	1·2	3·1	20	27·5	15	11	5	11·5	78·5	9·5
7a	85-95 cm	1·8	1	0·7	0·8	2·6	23	22·5	16·25	8·75	6	16	76·5	6·9
7a	95-100 cm	0·5	0·5	0·4	0·47	2	21	24	20	11·5	3	17	79·5	3·87
5	110-120 cm	0·42	0·37	0·37	0·42	2	21·3	25	15	10	5	20	76·3	3·58
5	130-135 cm	0·8	0·5	0·4	0·5	2·3	20·5	17·5	17·5	11	6	23	72·5	4·5
3b	135-138 cm	0·55	0·32	0·35	0·6	2·8	22	22·5	20	9	7	15	80·5	4·62
3a	145-153 cm	0·2	0·22	0·2	0·45	2·5	19,05	19	18	12	7	21	75·05	3·5
3a	153-158 cm	0·27	0·2	0·25	0·32	1·3	17·6	25	12·5	16	11	15	82·1	2·3
1b	158-200 cm	6·17	7·02		3·6	3·72	12·39	13	13	11·25	10	14	59·64	25·5

Table XXIV. Chalton, Trench b, particle size data relating to material smaller than 2mm (-1 Ø).

Heavy minerals in 63-20μm fraction	%
Rutile group	4
Staurolite	<1
Tormaline	1
Garnet group	4
Zircon	19
Epidote group	39
Mica group	2
Amphibole group	30
Others	<1

105-63μm fraction = 100% opaque minerals
63-20μm fraction = 61% opaque minerals

Table XXV. Chalton, heavy mineral analysis of soil at SU 7315 (after Perrin et al. 1974, Table 3).

Data from 1,000 point count analysis	%
Silasepic; porphyroskelic matrix	67
Voids	13·1
Mineral	3·2
>20μm organic matter fragments	0·3
Fe/Mn Nodules	1·8
Intrapedal clay concentrations	6·2
Void ferriargillans, argillans	2·7
Matrans, matriargillans	5·4
TOTAL	100

Table XXVI. Micromorphological analysis of sample b by Dr R. Macphail.

micromorphological study was conducted. Two samples were taken from Layer 3a as indicated on Plate LII: Sample b came from the very base of the layer adjoining its junction with the chalk, Sample a was just below the stone line at the layer's surface. In the event they proved to be very similar and only Sample b was examined in detail. It can be described as follows using the method and terminology of Brewer 1964; Bullock and Murphy, 1979:-

Homogenous; well developed fine and medium subangular blocky; total macrovoids (> 20μm) 13.1%; smoothed orthovughs and channels occur intrapedally; silt-size mineral grains dominantly quartz; includes fine gravel-size flint; coarse grains angular; small grains moderately rounded; many fine void argillans (few medium); few compound ferriargillans; few embedded argillans; common to many fine to medium matrans and matriargillans; common to many irregular and linear intrapedal clay concentrations; few fine to medium distinct ferromanganiferous nodules; finely mixed organic matter and medium organic matter fragments in matrix; fine organic matter fragments in matrans; silt layers within compound matrans and matriargillans, silasepic; porphyroskelic.

Data from a 1000 point count analysis are presented in Table XXVI. The sample derives from a Bt(g) horizon in loessic material, there is no obvious charcoal and the sample is not affected by earthworms. Two phases of illuvial clay deposition and soil formation may be identified. The first is represented by embedded argillans and intrapedal clay concentrations which may relate to soliflucted soil material from an interglacial with later periglacial mixing. The second is represented by well formed void ferriargillans which seem likely, on the basis of similar features in the soils of the Luxembourg Ardennes (Kwaad and Mücher 1977, p.11), to represent Atlantic to Sub-boreal Bt formation. There are also other less continuous argillans which are subsequent, and later soil formation also led to secondary porosity. Redistributed matrix material which includes silts and are known as matrans, and redistributed orientated matrix material known as matriargillans are evidence of human cultivation especially as in this soil where they include fragments of organic matter. Both are characteristic features of the agric horizons and agricutans mentioned in the previous section. One compound matriargillan, 100 microns thick, contains linear bands of iron poor clay perhaps relating to a season of waterlogged conditions. Another compound matran/matriargillan has phases of silty (30 µm wide), followed by clay-rich layers. What this implies is the presence of at least two clear episodes reflecting perhaps a seasonal or land-use alteration. The formation of these matrans and matriargillans occurred before the major accumulation of colluvium at this site. What Layer 3 seems to represent, therefore, is early Postglacial pedogenesis that involved both clay and silt translocation, the latter probably engendered by an early phase of cultivation. Subsequently truncation and erosion of the surface of this soil occurred, as already suggested (p.332), producing a sequence very similar to the truncated Bt horizons and overlying colluvium reported by Kwaad and Mücher (1979, pp.183-4) in the Luxembourg Ardennes.

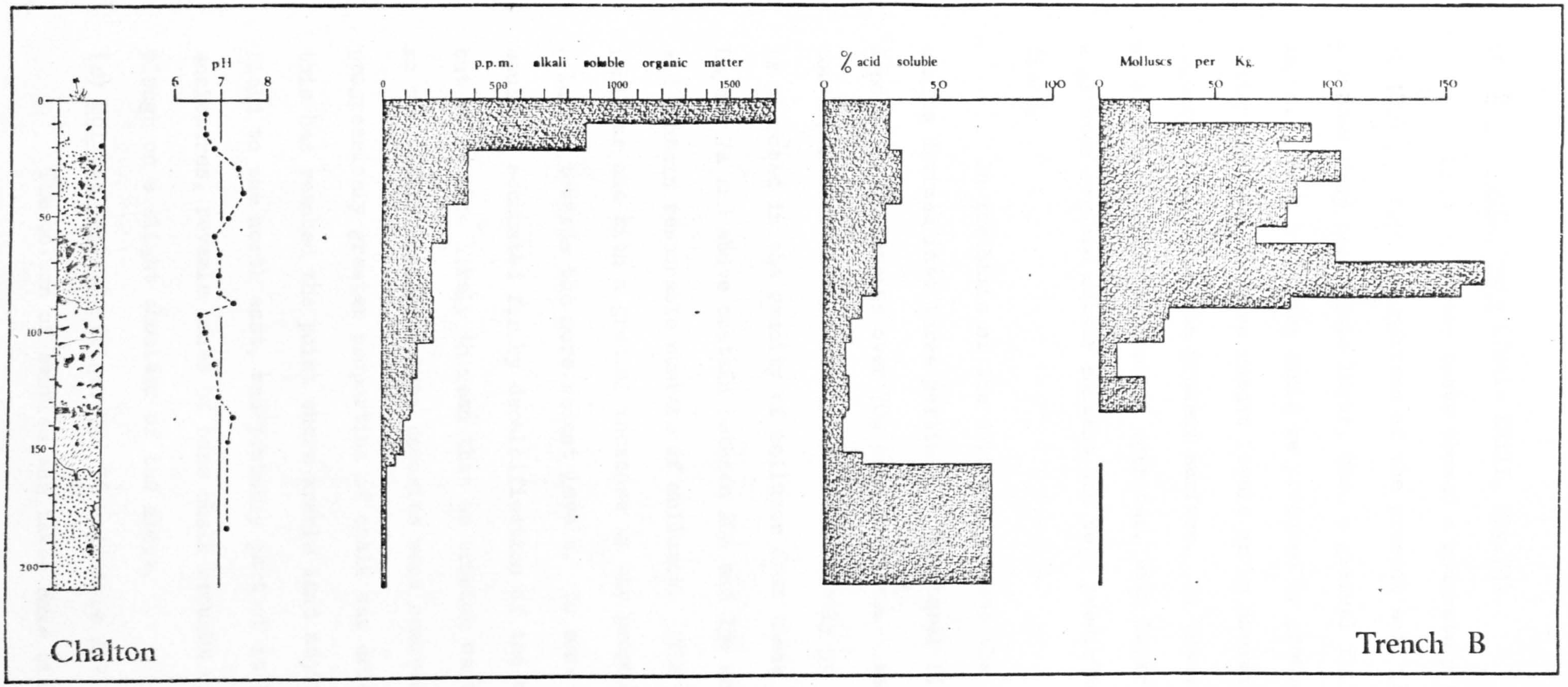

Fig.74. Graph of soil analytical data from Chalton, Trench b.

(r) Simple soil tests (Table XXIII, Fig.74).

Organic matter tests showed a moderately high figure of 1696 ppm from the surface of the present soil (Layer 10), a sudden drop below this layer, then a gradual fall-off with depth. Such a pattern could be produced by greater organic matter survival in more recent levels or by downwashing of organic matter from the present surface. No trace was picked up of the possible standstill episodes, even Layer 7a where a greater organic matter content had been predicted in the field.

On the basis of the calcimetry tests the stratigraphy can be divided into three portions. The basal Pleistocene deposit (1b) contains over 70% acid solubles. Layer 3a - 7a contain less then 20% acid solubles and mostly c. 10%; this is mirrored in the paucity of molluscs from these layers. Layers 7a and above contain between 20% and 25% acid solubles and contain reasonable numbers of molluscs. The pattern is a familiar one with a gradual increase in the proportion of acid solubles towards the more recent levels. To some extent this could be accounted for by decalcification of the basal horizons, but it is also likely to mean that as erosion went on upslope so the superficial silt loam deposits were removed and a progressively greater proportion of chalk was eroded. Today this has reached the point where arable land adjoining this field to the north east, and probably part of it before the enclosures, reveals zones of bare chalk brought up by the plough on a slight shoulder of the slope.

(s) Mollusc analysis (Figs. 75, 76 and Table XXVII).

The column of samples was taken some distance from

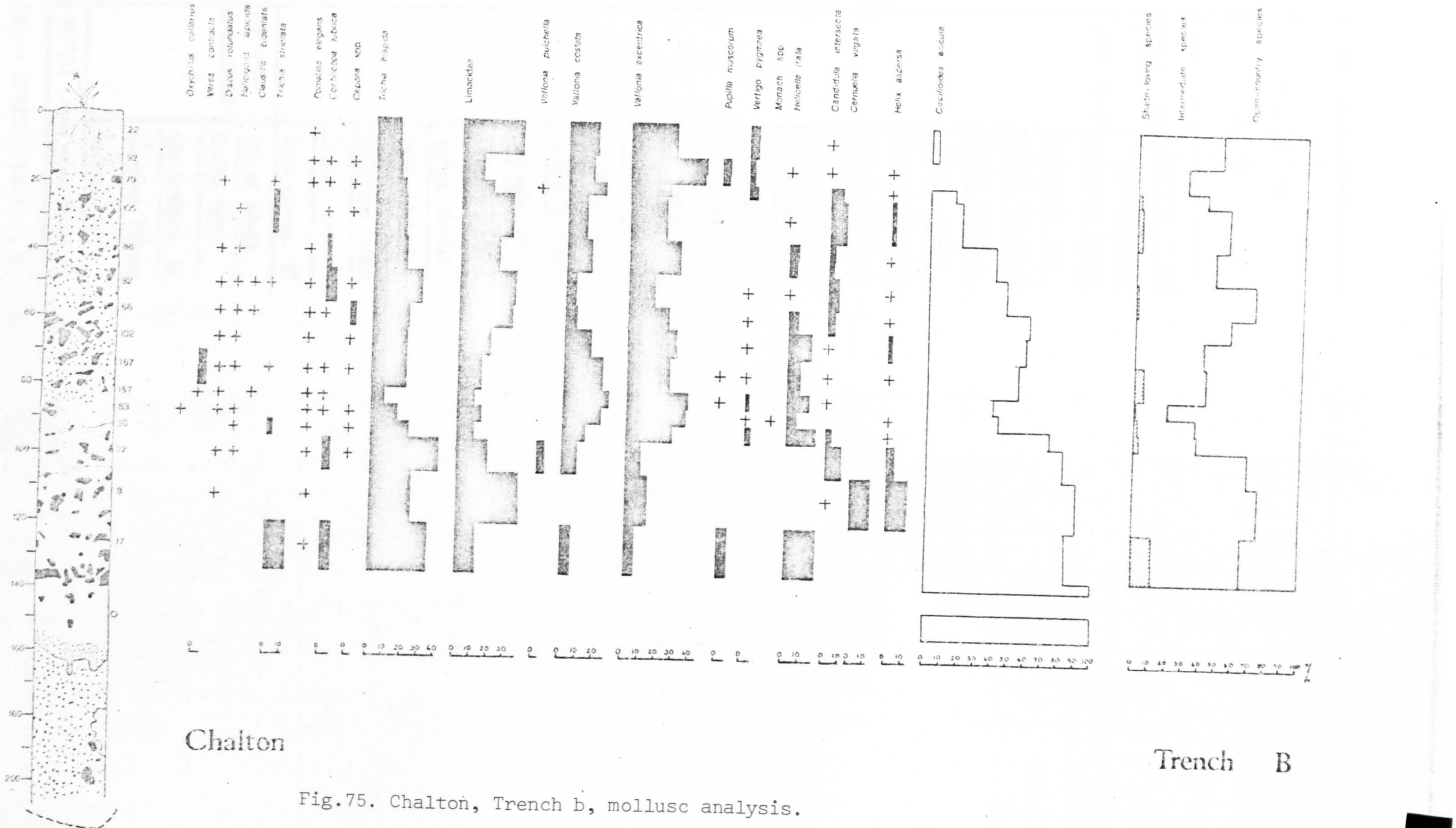

Fig.75. Chalton, Trench b, mollusc analysis.

CHALTON Trench B	Layers	10		9					8			7a			5		3b	3a	1b			2	3a				
		0-10 cm	10-18 cm	18-22 cm	22-35 cm	35-45 cm	45-55 cm	55-62 cm	62-70 cm	70-80 cm	80-85 cm	85-90 cm	90-95 cm	95-105 cm	105-120 cm	120-135 cm	135-138 cm	138-158 cm	158-200 cm			Sample 14	Sample 13		Sample 1	Sample 2	Sample 3
	Quantity of soil	1kg	1kg	1kg	1kg	1kg	1kg	1kg	1kg	1kg	1kg	1kg	1kg	780g	1kg	850g	130g	1kg	1kg			1kg	1kg		81g	56g	60-32g
LAND MOLLUSCS	Pomatias elegans (Müller)	+	+	+		+	+	+	+	1	1	+	+	+	+	+										+	+
	Cochlicopa lubrica (Müller)			1			5				2			1		1						1					
	Cochlicopa spp.		1		1	3		+		+		1													1		+
	Vertigo pygmaea (Draparnaud)	1	3	4			1	1	1	1	3	1	1									1					
	Pupilla muscorum (Linné)		4							2	1					1						+				1	1
	Vallonia costata (Müller)	4	15	17	13	13	5	5	15	39	43	18	4	2		1						3			3	2	
	Vallonia pulchella (Müller)			1										1													
	Vallonia excentrica Sterki	6	41	19	23	26	12	16	30	41	56	29	8	2	1	1						2				3	1
	Discus rotundatus (Müller)			1		+	+	+	+	+	+	+		+	+							+					
	Vitrea contracta (Wederlund)									9	2																
	Oxychilus cellarius (Müller)											1															
	LIMACIDAE	8	11	15	32	20	27	22	19	24	15	12	3	4	3	2			1			2			1	1	
	Cecilioides acicula (Müller)	1		14	24	58	72	105	146	103	104	63	87	99	73	87	31	28	2			60	2		22	16	4
	Clausilia bidentata (Ström)											1															
	CLAUSILIIDAE						+	+																			
	Candidula intersecta (Poiret)	+	1	6	10	3	5	3	+	+	1		1	2	+										4	+	+
	Cernuella virgata (Da Costa)														1												
	Helicella itala (Linné)		1		1	4	1	4	14	14	21	5	5			3										1	
	Trichia striolata (C. Pfeiffer)			1	3		1			1			1			2									1	1	
	Trichia hispida (Linné)	3	14	14	20	17	24	15	21	35	12	14	7	9	2	6									14	5	2
	Helicigona lapicida (Linné)				+	+	+	+	+	+		+	+	+													
	Cepaea spp.		1	+	+		1	2	+	+		+	+	+											+		+
	Helix aspersa (Müller)		+	+	2	+	+	+	2	+		1	+	1	1										+		+
MARINE MOLLUSCS	Ostrea edulis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+									+	+	+
	Mytilus edulis		+	+	+	+	+	+	+	+		+			+										+		
	Cerastoderma edule								+		+																
	Littorina littorea				+	+		+?																	+		
	Balanus spp.			+																							
TOTAL : land apices (minus C. acicula)		22	92	79	105	86	82	68	102	167	157	88	30	22	8	17	0	0	1			9	0		24	14	4

Table XXVII, Chalton, Trench B, the molluscs from the sample column, Samples 13 and 14, and Samples 1-3 from earthworm burrows.

the valley centre because at this point chalk pieces were present to a greater depth. Even so there were few molluscs below Layer 7 and in an attempt to obtain data on the early environmental history of the site two samples were taken from the subsoil feature at 22.4-23.5m. Sample 13 came from silty loam (Layer 3a) near the base of the feature and was devoid both of chalk and Mollusca. Sample 14 came from a zone of chalky, altered Layer 1a material which was surrounded by the clay loam of the feature. Even this contained only nine apices which were mostly of open country species, so analysis did nothing to sustain the field hypothesis that the feature was a fossil tree hole. Obviously the area must once have been wooded but virtually no evidence has survived in this valley. This may be because earlier sediments have been eroded down the valley axis, it may also be because the basal horizons have been decalcified. Interpreting the few molluscs which were found in these lower layers is obviously a difficult matter which is best put aside until we have considered Layers 7a and above, where there were more molluscs.

There was a pronounced increase in the number of apical fragments through Layer 7, from 22 at the base to 83 at the surface. This is tentatively put down to a more calcareous régime engendered by erosion during the cultivation episode which buried this layer. If that is so then the molluscs which survive may only represent the latest phase in this soil's life. That would explain the limited evidence for ecological change between this layer, interpreted as a ?palaeosol, and the overlying colluvial deposits. Furthermore the soil was unsorted and may well have been cultivated from time to time. Even so there are hints of some faunal change; the numbers of Trichia hispida decline progressively towards the surface of this layer, and at the same time the proportions of both Vallonia excentrica and Vallonia costata increase. Unfortunately this change is difficult to interpret in view of the very wide range of habitats in which Trichia hispida flourishes.

The problem of assessing the conditions under which this and the succeeding layer accumulated is best approached obliquely by considering the various possibilities. Woodland species are scattered throughout but in very small percentages, never more than 6% and usually much less. Species such as Pomatias elegans and Discus rotundatus were only represented in most samples by tiny non-apical fragments, and it seems likely that many of the woodland elements were derived from eroding subsoil features upslope. Clearly the environment was an open one but there is also very little sign of species which would hint at prolonged episodes of permanent grassland. Cochlicopa lubrica, Vitrea contracta, Pupilla muscorum and Vertigo pygmaea, which might expand with more stable conditions, are all present but in very small numbers, and furthermore their individual occurrences do not correlate to suggest particular horizons of more stable conditions. The only sign of this is in the modern top soil (Layer 10) where we get rather more examples of Pupilla muscorum and Vertigo pygmaea at a time when we know this field has been periodically laid down to grass. What we are left with in Layer 7 and above is a very restricted fauna both in terms of the number of apices per kg., (between 22 and only 167) and in terms of the number of numerically significant species. Clearly this was not a particularly favourable environment for mollusc life. Essentially the fauna is dominated by Vallonia costata, Vallonia excentrica, Trichia hispida and the Limacidae, similar in fact to the faunas reported from the other colluvial deposits investigated (Table X). Our original interpretation, that this restricted fauna relates to a rather harsh arable environment, finds some measure of support from the two next most abundant species. In Layers 7 and 8 Helicella itala, which seems to be able to tolerate arable conditions, forms 10-15%; this may have been superseded in Layer 9 by the equally tolerant introduced Helicellid Candidula intersecta. It is quite obvious on sedimentological grounds that Layer 9, with its numerous small chalk pieces, was laid down during an episode of cultivation. What the essential continuity of the mollusc fauna tells us is that a fairly intensive arable régime was being followed throughout the period from Layer 7 to the present day, i.e., since perhaps the early Roman period. Further evidence for the importance of human activity and settlement throughout this period is the presence of a small proportion of species which today have synanthropic tendencies, such as Trichia striolata and Helix aspersa.

It remains to consider the few molluscs which were found in the largely unproductive basal layers like 5 and the base of 7. This is a particular problem because these apparently pre-Roman layers contained examples of Candidula intersecta, Cernuella virgata and Helix aspersa, the first two Medieval introductions, the last a Roman introduction (Kerney 1966). Furthermore the sample at 120-135cm. contained single samples of Trichia striolata and Pupilla muscorum with traces of their proteinaceous periostracum showing that they were of recent origin. All this suggests that here, as at Kiln Combe (p.177), the few Mollusca present in the basal layers are intrusive. In this valley a possible mechanism for their intrusion was suggested by the presence of earthworm burrows filled with darker soil (visible on Plate LII). Previously, Evans (1972, p.241) has drawn attention to the possibility of mollusc contamination by earthworm activity in sub-surface horizons and Keepax (1977) has shown that worms can be responsible for the introduction of modern seeds into archaeological deposits.

To examine this possibility earthworm burrows in three areas of the section were sampled. Samples 1 and 2 came from basal horizons and consisted mainly of material scooped from aestivation chambers in the silt loam near its junction with the chalk. Sample 3 came from earthworm channels in the Medieval colluvium. The material was broken up using dilute H_2O_2, divided into fractions on sieves (the smallest 0.5mm) and the results presented as histograms (Fig.76). These show that the aestivation chambers contain only a very small proportion of coarse sand grade material which, according to Evans (1972, p.212), is the largest grade which can actually pass through an earthworm's gut. Most of the material retained on the sieves was small rounded chalk pieces between 2mm. and 4.7mm. in diameter; these fragments were clustered within aestivation chambers and obviously consisted of a deliberate lining, among which were clustered some mollusc shells. These too were probably deliberately taken down as lining material - they were species common in the overlying deposits. To prove the point Sample 1 included four apices of the Medieval introduction Candidula intersecta and Sample 1-3 all contained numerous uncarbonised seeds. Sample 3 was rather different, its fill showed little sign of sorting in the range 2mm. to 5mm., and the sample consisted very largely of fine humic soil which had evidently been washed down. The few mollusc fragments found in

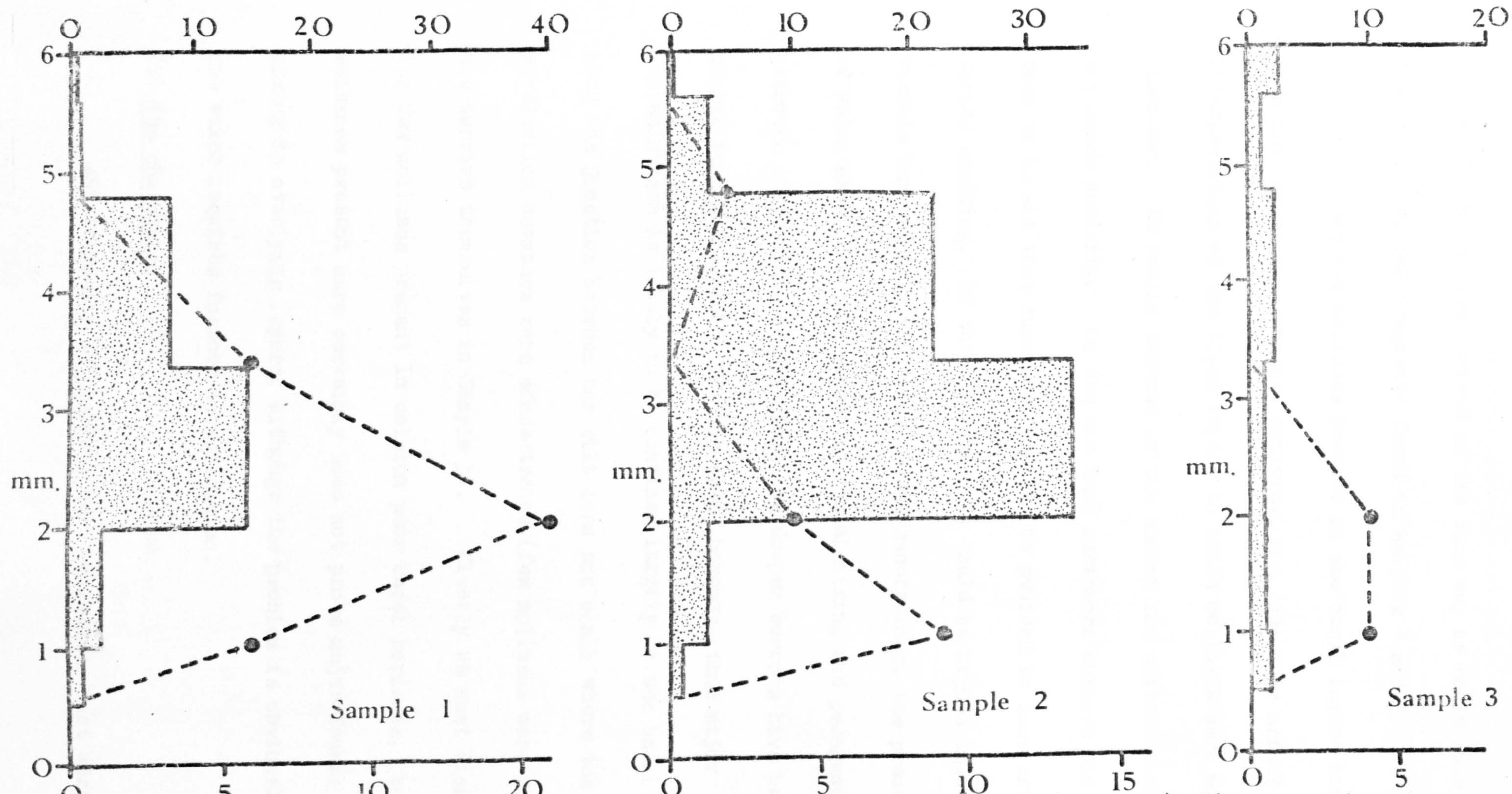

Fig.76. Contents of aestivation chambers (Samples 1 and 2) and earthworm burrows (Sample 3). Histograms show the proportions of particles (top axis) retained on sieves. Broken lines show the number of mollusc fragments (bottom axis) in each size fraction.

the sample could have arrived in the same way as could some of the smaller apical fragments found in samples 1 and 2.

If the few molluscs present in the basal layers have been introduced by earthworm activity, how does this affect our interpretation of the upper layers in which molluscs were more numerous? It really depends on the amount and distribution of earthworm activity. On the one hand earthworm burrows did not seem to be all that numerous, and can be avoided to some extent during sampling. On the other hand it could be argued that the visible burrows only represent recent generations, the predecessors of which have been obliterated by faunal mixing and pedogenesis, although it is also possible that the deeper burrows have been reused time and again. It does seem, however, that major contamination is likely to be confined largely to the basal deposits near the junction between the silt loam and chalk where the aestivation chambers were concentrated (few molluscs were found in the burrows themselves in Sample 3). Clearly we must disregard the few molluscs present in calcium poor basal horizons, but the evidence present here certainly does not prove major faunal mixing in overlying layers, although the problem is obviously one which requires further investigation.

(t) <u>The charcoals</u>.

493 fragments of charcoal were collected, most were

impossibly small for identification, sometimes little more than smears of carbon on the soil. Sampling was concentrated on the lower horizons and, as a general rule, samples were not collected beyond 7.4m. Despite this rather selective collecting the distribution (Fig.65c) does reflect a real concentration of charcoal in Layer 4 and the base of Layer 5. Time did not permit the examination of all the fragments with a view to identification so key contexts were selected.

It is of particular interest that 52 fragments were found in Layer 3, the basal Postglacial clay loam with flints deposit which has been interpreted as a truncated Bt horizon. The following identifications were made by Joan Sheldon:-

Crataegus type (Hawthorn type): 1871; 1908; 1999; 2183; 3006.

Corylus (Hazel): 3017.

Cornus sanguinea (Dogwood, Cornel): 1870; 3012.

Rhamnus catharticus (Buckthorn): ?1889, possible identification on small fragment.

Fraxinus (Ash): ?3007, probably Ash but very small piece.

Prunus (Rosacae family): ?3059, certainly hardwood, possibly Prunus.

Hardwood fragments too small for further identification: 2156; 2173; 3021; 3024.

Possible conifer fragment but very small: 3051.

All the charcoals were also examined from a one metre square section of Layer 4 located between 3 and 4m:-

Crataegus type (Hawthorn type): 1924; 1936; 2182; (2185, too small for longitudinal section, but probably this taxon).

Corylus (Hazel): 2249; 1911.

Corylus (Hazel)/Alnus (Alder): 2187 too small for longitudinal section to distinguish these two by perforation plates.

Cornus sanguinea (Dogwood, Cornel): 1893.

Fraxinus (Ash): 1929; 2186.

Hardwood: 2048.

Three other charcoals were also examined from elsewhere in Layer 4:-

Quercus (Oak): 2882a.

Fraxinus (Ash): 2882b; 2929.

Despite the probability that Layers 3 and 4 are fairly widely separated in time, probably by an episode of truncation, there is little difference in the taxa represented by charcoals. In both cases the likelihood is that we are not dealing with initial colonisation or climax vegetation on the Chalk but more probably with post clearance regeneration phases with mainly scrub growth. It is difficult to state this with certainty in view of the small number of pieces of charcoal and our limited palynological evidence relating to successions on the Chalk. If, however, it is valid to take present day woodland regeneration in this area as an analogy then Hawthorn is certainly one of the most abundant species in the early stages and ash plays an important part in the succession in some areas (Tansley 1939, p.382). Two of the most frequent woodland trees in the Chalton area today are Yew (Tansley 1939, Fig.71) and Beech (p.291) but both are absent from these samples, which possibly supports the evidence from elsewhere (Beech: Pennington 1974, p.105; Yew: Tittensor 1980, p.255) that these species only became important on the Chalk at a comparatively late date.

(u) <u>The soil pits</u> (Fig. 62).

Two soil pits were dug on either side of the valley, on the same axis as the trench, in order to look at the sediments upslope.

<u>Soil Pit f.</u> On the east side of the valley 70m. from the valley centre on the edge of the same field just below a, probably recent, lynchet which may mean there is a slight negative lynchet here.

0 - 21cm. A	Dark brown (7.5YR 3/2) silty loam with few medium flint nodules; granular structure; abrupt smooth boundary.
21 - 33cm. AC	Dark yellowish brown (10YR 4/4) silt loam with common medium flint nodules and many small chalk pieces; subangular blocky structure; abrupt irregular boundary.

33 + cm. C	Very pale brown (10YR 8/4) hard, probably <u>in situ</u> chalk, surface disrupted by old root channels.

<u>Soil Pit g</u>. On the west side of the valley, 75m. from the valley centre.

0 - 23cm. A	Dark brown (7.5YR 3/2) silty loam with common medium flint nodules and very small chalk pieces; granular structure; abrupt smooth boundary.
23 - 44cm. ?BW	Dark yellowish brown (10YR 4/4) silt loam with common medium flint nodules and many small chalk pieces; subangular blocky structure; gradual wavy boundary.
44 - 58cm. BW/C	Yellowish brown (10YR 5/6) silty loam with few medium flints and abundant small and very small chalk pieces which probably represent weathered Pleistocene marl; subangular blocky structure; abrupt wavy boundary.
58 + cm. C	Pale yellow (2.5Y. 8/4) chalk, apparently fairly solid.

It is interesting to find such a deep colluvial soil here without any obvious surface lynchetting to account for it. Presumably the blanket of colluvium revealed by Trench B extends a fair way up the gentle west slope.

Soil Pit c (Plate LV). This was on the valley floor 170m. up from the trench in a cattleyard just north of Chalton Lane. (SU 7307516180).

Layer No. (and depth)	Description.
1 (0 - 18cm)	Very dark greyish brown (10YR 3/2) silt loam with common medium flint nodules and few small chalk pieces; granular to subangular blocky structure; clear smooth boundary. A fragment of daub came from this layer.
2 (18 - 26cm)	Very dark greyish brown (10YR 3/2) silt loam with many medium to large flint nodules and abundant small chalk pieces; subangular blocky structure; clear smooth boundary.
3 (26 - 69cm)	Dark brown (7.5YR 4/4) silt loam with many medium and large flint nodules and few small chalk pieces; subangular blocky structure; gradual wavy boundary.
4 (69 - 105cm)	Strong brown (7.5YR 5/6) silt loam with abundant large and medium flint nodules with very few small chalk pieces; subangular blocky structure; clear smooth boundary. A cow's tooth and a sherd of Medieval Fabric 116 came from this layer.
5 (105 - 144cm)	Dark brown (7.5YR 4/4) silty clay loam with few medium flint nodules and few small chalk pieces; subangular blocky structure; clear smooth boundary.

Plate LV. Chalton,Soil Pit c, higher up the minor valley in which Trench b was located.

6 (144 - 151cm)	Reddish brown (5YR 4/4) silty clay loam with extremely abundant medium and large flint nodules but no chalk, clear wavy boundary. A flint flake and a sherd of early Medieval Fabric 112 came from this layer.
7 (151 - 162cm)	Reddish brown (5YR 4/4) silty clay loam with few medium flint nodules and no chalk; subangular to prismatic structure; gradual wavy boundary; may represent a palaeosol.
8 (162 - 180cm)	Reddish brown (5YR 4/4) silty clay loam with few medium flint nodules and no chalk, subangular to prismatic structure; gradual wavy boundary.
9 (180 - c. 220cm)	Yellowish red (5YR 4/6) clay loam with many large flint nodules but no chalk; clay content seemed to increase towards junction with chalk; sharp irregular boundary.
10 (c. 220 + cm)	Very pale brown (10YR 8/3) chalk marl Pleistocene deposit.

It is of interest that this pit revealed a similar depth of sediments to Trench b and a roughly comparable stratigraphy, indeed there seems likely to be a fairly uniform blanket of colluvium over the floor even of this minor dry valley. Such a blanket may not necessarily all be of similar date. In fact the isolated sherd of ? Fabric 112 in Layer 6 could suggest that most of the colluvium in Pit c accumulated since the early Medieval period, but with only one sherd we cannot be certain.

(v) Conclusions.

The contrast between Trenches a and b is obvious: the virtual absence of colluvial sediments in the major valley coupled with the good thickness in the minor valley argues persuasively for our provisional conclusion that sediments have to some degree been eroded by lavant action in the major valley. Another factor appertaining to the loss of valley floor sediments is the effect of mildly acidic groundwater. Decalcification has obviously taken place in the centre of the Trench b valley because non-calcareous sediment grades laterally into calcareous sediment on the slopes. Percolating water would obviously be concentrated on the valley floor, its volume increasing with the size of the valley and its catchment. This would help to explain the virtual absence of calcareous sediment in Bascomb. Lavant action and decalcification are likely to be two of the main reasons why some major dry valleys produce little in the way of Postglacial deposits.

Here, as in the other valleys, it may be instructive to try to assess the depth of eroded soil represented by the valley sediments discovered. In Bascomb there was a cross sectional area of $11.3m^2$ of sediment in one half of the valley and contributing slopes on both sides totalling c. 950m. This might imply the erosion of perhaps 2.5cm. but for reasons already explained we can be sure this is an underestimate. In Trench b the valley sediments, below the present top soil, had a total cross sectional area of c. $28m^2$, but we know that the deposits extend further upslope because they were still 30cm. deep 30m. from the valley centre, and 40cm. of colluvium were found in Pit g. If, therefore, we assume a total cross sectional area of $60m^2$, this is likely to be an underestimate. Contributing side slopes in this valley are c. 500m. to the east and c. 170m. to the west, possibly implying the erosion of some 9cm. from the valley sides. It is also of interest to consider the amount of erosion which took place in the Medieval period, a period when we know the contributing slope to the east was only c. 180m. long, beyond which were the buildings and lanes of Chalton village. The total cross section area of Medieval colluvium is c. $20m^2$, suggesting perhaps the erosion of some 5cm. during that period. Clearly these figures are no more than very crude approximations and the important thing here, as at Kiln Combe, is the loessic character of much of the eroded sediment. This may help to explain the density and longevity of archaeologically attested activity in the Chalton area.

This evidence for soil erosion obviously has implications for the nearby Butser Experimental Ancient Farm. The farm is producing a growing body of knowledge with regard to early agriculture, crop weeds and yields, etc., and in the longer term data about soil movement under primitive cultivation techniques should become available. So far crop yields without manure have been remarkably high (Reynolds 1979, p.6), but these are short term yields from land which has been under pasture for a considerable period. In considering the longer term picture it will be necessary to take into account the pedological changes which the valley sediments suggest may have occurred in parts of this area.

The association between lithic sites and Clay-with-flints outcrops has been noted on Windmill Hill, Chalton. The same thing was remarked upon by Jacobi (1978, p.77), who suggested a perched water table as one possible explanation. Care (1979, p.95) emphasised the effect of raw material on site location. Both these factors are clearly highly relevant, but the discovery of flint artifacts in the basal clay loam and flints in both valleys suggest a third possibility - that lithic material may sometimes have been preserved from erosion by incorporation within clay illuviation horizons. Such horizons would be particularly well developed where there was a reasonable thickness of superficial deposits which would itself also make those areas less attractive for later cultivation and thus less subject to erosion.

Sufficient has been said elsewhere to demonstrate that under normal circumstances there is little chance of recovering *in situ* lithic material from field walking on valley floors. In later periods the effects of erosion and differential destruction are clearly seen in the survival of earthworks, particularly field systems on the higher downland areas of thin soils, whereas they have been very largely eroded on the more gentle dip slopes and buried in the valleys. This is nowhere better demonstrated than in the zone of destruction which corresponds to the arable land of Saxon and Medieval Chalton. Trench b served as a keyhole examination of that zone, and proved that, despite the absence of earlier archaeological material on the surface, the valley sediments preserved a land-use history stretching back, probably to the Bronze Age.

CHAPTER 7

CONCLUSIONS AND SYNTHESIS

It now remains to assess the wider implications of the results from these study areas, to identify the problems that remain and to make suggestions as to how they may be resolved in the future. The literature review was followed on p.73 by a bald statement of some of the main research problems, which now provide convenient headings under which to consider the conclusions.

(i) Valley sediments as sources of evidence about prehistoric land-use.

Three study areas have been considered; all were already well known archaeologically but there were virtually no palaeoenvironmental data. This was largely because of the eroded nature of the sites and the consequent absence of suitable contexts for its preservation. There do exist a few areas within, or close to, the Chalk which produce excellent environmental sequences. The most important examples studied so far are the Vale of Brooks (p.65) and the peat filled solution feature at Rimsmoor, Dorset, which has recently produced an extremely full sequence of Postglacial vegetational changes (Waton, pers. comm). Such areas are exceptional and for much of the Chalk the only really widespread environments of deposition likely to produce sequences of any length are the valleys. As sources of data about prehistoric land-use these have the particular advantage of lying within the exploitation area and potential arable land of prehistoric sites. Thus they provide different classes of data from the other palaeoenvironmental information sinks: the bogs, lakes, tufa deposits, etc., usually in situations more marginal to the scenes of direct human activity. Inherent in this advantage there are also certain disadvantages because the level of anthropogenic activity inevitably means that episodes of erosion occur. In each of our valleys the original woodland soil had been lost and with it, quite probably all evidence of early prehistoric human activity. Later episodes of erosion may not always be so easy to detect and we must be constantly aware that hiatuses may exist in our sequence. There is also the problem of trying to generalise about prehistoric land-use from valleys, which, with their deeper soils, more sheltered aspect and sometimes more favourable microclimate (but N.B. the possibility of frost hollows), might have been specifically favoured as areas for more intensive land-use. We cannot therefore automatically regard them as typical of what was happening on the slopes, spurs and crests of the downs, although of course much of the sediment must have been eroded from the valley sides and neighbouring spurs.

The methodology employed here, that of specifically selecting a site within a partially surviving prehistoric landscape, sectioning it oneself and dissecting the sediments by hand over a period of weeks, has certain important advantages over relying on chance exposures or small soil pits. Time and again stratigraphic detail, particularly palaeosol horizons, appeared or became clearer after weathering for a few weeks. Much of the stratigraphic detail could simply not have been interpreted within the confines of a soil pit. Both these and chance exposures suffer from the additional drawback that much of the stratigraphy is liable to be imperfectly dated.

In line with the aim of this study of devising and testing a methodology for the examination of valley sediments in general, intensive work was concentrated on individual sections of deposits. A multi-disciplinary approach has been favoured: data being drawn from artifacts, molluscs, sedimentological studies, simple soil tests, etc. This has the great advantage of facilitating comparison between different sources of evidence. Frequently these turn out to be complementary: the mollusc evidence helps us to understand the origin of certain types of sediment, the standstill and sorting horizons are brought out by sedimentological studies and artifact layers. Furthermore, charcoal and molluscan evidence considered together enables us to interpret a possible clearance episode at Itford Bottom as secondary rather than primary clearance. Interdisciplinary work does of course mean that the individual sources cannot always be followed up to the extent that one would wish. More would certainly have been learned had the molluscs been sampled at smaller intervals, samples been analysed to investigate lateral variation and some comparative work done on present day mollusc faunas, particularly mollusc shell survival in arable areas and also hedge faunas.

More work also needs to be done to investigate the different types of deposit in dry valleys. Some, such as the stabilization horizons and the typically unsorted layers associated with arable agriculture, are diagnostic enough. Much less easy to interpret are the thicker, flinty horizons for which we have put forward a number of possible explanations which can be tested by future research. Another problem needing investigation is the type of sedimentological sequence which would be produced by alternating pastoral and arable phases. This study has been prevented from coming to grips with these problems because molluscs simply have not survived in certain key horizons. Future investigations in areas where superficial deposits are less extensive should be more successful.

The methods employed here would seem to be capable of wider application. Their relevance is obvious in chalkland areas where settlement sites of a rather eroded nature are being investigated. Colluvial deposits also exist in limestone areas such as the Mendips, Cotswolds and Chilterns where many of the archaeological and land-use problems are equally acute and might be tackled in a similar way. A methodology of this kind would also seem appropriate to future studies of Mediterranean valley sediments. Here the important problems and controversies outlined on pages 5-12 will only be resolved by detailed work in relatively small areas where it should be possible to refine the dating of the sedimentological sequence, establish to what extent it is related to archaeological evidence for land-use changes, and above all assess the colluvial contribution to the younger fill.

It is not suggested that the full range of methods employed here is necessarily appropriate to future investigations in other areas. If archaeologists are concerned simply with establishing the extent of colluvial deposits, roughly how much erosion has occurred and very approximately when it occurred, the most suitable method would seem to be a series of, preferably machine dug, soil pits. Likewise if they are seeking evidence of settlement sites buried by eroded sediments. On the other hand more detailed investigation of individual trenches would seem to be appropriate where the aim is to investigate the land-use history round an eroded site, or in the Mediterranean situation where refinement of the chronology is an absolute priority.

(ii) The dating evidence and its reliability.

Perhaps the most surprising aspect of the present study was the remarkable quantity of artifacts. A breakdown of the numbers, artifacts per cubic metre, etc., in each valley is given in Table XXVIII. It has been demonstrated by the numerous distribution diagrams that colluvial deposits preserve a crude artifact stratigraphy. This has enabled us to suggest dates of varying precision for many of the layers and even more importantly it has made it possible to put forward certain tentative links between sedimentological events and the settlement archaeology.

In correlating the archaeological and land-use evidence in these valleys there is a tendency to make the assumption that the number of artifacts deposited reflects the intensity of land-use. Since much of the material seems to derive from manuring there may be some general validity in that proposition. It does, however, remain true that certain land-use episodes may have gone completely undetected because no artifacts were deposited at the time. This could have happened even in periods of intensive cultivation and manuring if the animals were stalled away from settlement sites or folded directly onto the fields. In some ways this problem may turn out to be more theoretical than real because the main deposits of ploughwash colluvium contained heavy artifact scatters.

We must also give consideration to factors which may influence the reliability of the dating evidence. At the outset the classification of sherds obviously presents certain problems, for instance that of distinguishing between some sandy Roman and Medieval fabrics at Chalton. When we come to date the fabrics we are dependent to a significant extent on diagnostic sherds and where these were absent, it has often only been possible to suggest a date within a very broad band. A much larger problem concerns the origin of the artifacts being dated. Usually we have no way of knowing whether they were (1) deposited on or near the valley floor originally, (2) eroded directly from a settlement after its shift or abandonment, (3) spread first on the fields with manure and later eroded into a neighbouring valley. In the case of mechanisms 2 and 3 there is likely to have been a time interval between production of the artifacts and their final deposition on the valley floor.

Where sherds have been subject to a number of episodes of erosion, or exposed on the surface for a period the problem of sherd survival needs to be considered. Recent research at a Bronze Age site on Cameldown, Chalton (Reynolds 1978, p.148) which is under cultivation has shown that sherds exposed on the surface can be reduced in size by 60% in ten years, and in all probability are ultimately completely destroyed, mainly by frost splitting. The extent to which this occurs is likely to depend partly on sherd composition and fabric hardness. Better fired Romano-British and Medieval wares may accordingly be over-represented. This is the probable explanation for the very small numbers of prehistoric sherds in later contexts, and it may also be a partial explanation for the virtual absence of pre-Roman pottery in the field scatter and Trench a in Itford Bottom.

It follows from this that the greater proportion of artifacts on a valley floor are likely to be of category 1, i.e., those originally deposited nearby and quite quickly buried. This certainly seems to be borne out by the distribution patterns themselves. The clarity of these patterns seems to depend very much on the speed of burial. If sherd deposition was followed quite quickly by an episode during which sherds became buried by earthworm sorting prior to the next cultivation episode, then a rather better chronological sequence is likely to be preserved. This was the case in Kiln Combe when compared, for instance, with the basal layers at Chalton where the sequence was rather blurred, probably because of continuous cultivation.

It is an archaeological truism that what we recover and record is only a proportion, usually an unknown proportion, of the original assemblage. That problem is obviously much more acute when various phases of erosion and reworking intervene between the original assemblage and the final resting place of the artifacts. This is why some of our dates have rather broad margins. In a few cases, such as the basal deposits in Kiln Combe and Itford Bottom, an unusual constellation of strands of evidence has enabled us to put forward a more precise chronology. Even where the dating is more approximate this is not necessarily too much of a problem when we are dealing with landscape events over a long time span, and to this extent our concern is more with general trends than a very close chronology.

(iii) <u>The extent of colluvial deposits</u>.

The design of this project, based on three study areas with large trenches in each, does not provide an ideal basis from which to proffer categorical statements about the extent and thickness of colluvial deposits on the South Downs as a whole. Had that objective been in the forefront more emphasis would have been placed on random sampling, mapping and soil pits. Of necessity, however, something of a random element existed in the selection of sites, simply because few reliable criteria for selection could be identified. To some extent that remains true today, and it is salutary to reflect that the only instance in which there was clear surface evidence for valley sediments was Bascomb, where the stratigraphy turned out to be extremely shallow. Future progress in mapping these deposits could undoubtedly be made using geophysical prospecting methods and air photography. Employed on their own, however, these leave unanswered the most crucial archaeological problem, the date of the deposits. Only detailed 'surgical' examinations of the kind attempted here are likely to resolve this problem. They have, for instance, shown that in each of the study areas some of the deposits mapped as Valley Gravels by the Geological Survey can perhaps be more accurately described as Postglacial colluvium. These trenches have also served as keyhole examinations of the chronology of the various colluvial soil series mapped elsewhere on the South Downs by the Soil Survey (Hodgson 1967). In particular they have served to underline the important contribution of soil eroded under prehistoric agriculture to the formation of soils such as those in the Coombe and Charity Series.

The trenches, soil pits and chance exposures have given us a reasonable idea of the extent of colluvial deposits in the study areas. In all three, Postglacial colluvium, of variable thickness, seems to be more or less ubiquitous on valley floors. Subsequent erosion is clearly one of the factors influencing their thickness, as the comparison between Trenches a and b at Chalton showed. How extensive deposits of this kind are outside the study areas is not something that has been systematically investigated. However, casual observation suggests that they are commonplace and the Geological and Soil Survey maps give us some idea of their possible locations.

(iv) The cause and date of colluviation.

Various factors have, at different times, been suggested as causes of colluviation: climatic change, short catastrophic episodes, natural seral soil changes and loss of structure, and human land-use. Data collected in the course of this study have underlined the pre-eminent importance of the last named factor. The major colluvial layers investigated were unsorted and clearly the result of arable agriculture. Contained in them were very restricted mollusc faunas of dry open conditions and the small range of species present is consistent with an arable environment. Most persuasive of all, however, is the tremendous quantity of artifacts in the colluvium. The fact that this material is crudely stratified and was clearly not all eroded from settlement sites but presumably spread with manure, argues for a causal link between the process of colluviation and human activity. It emerged from the preliminary discussion of the processes of colluviation (pp. 42 - 54) that many of the most important factors such as seasonal creep, soil erodibility, rainsplash, wind, etc., were increased very considerably on a devegetated cultivated slope. Identification of land-use as the key factor does not rule out the possibility of additional contributing factors. No evidence has been found that natural seral soil changes are important on the Chalk, all the deposits postdate large scale anthropogenic effects and there seems no reason to challenge Limbrey's (1975) conclusion that the main soil changes on the Chalk were consequent upon human activity.

In recent years some writers have come to see climate as the pivotal influence on valley sedimentation from the

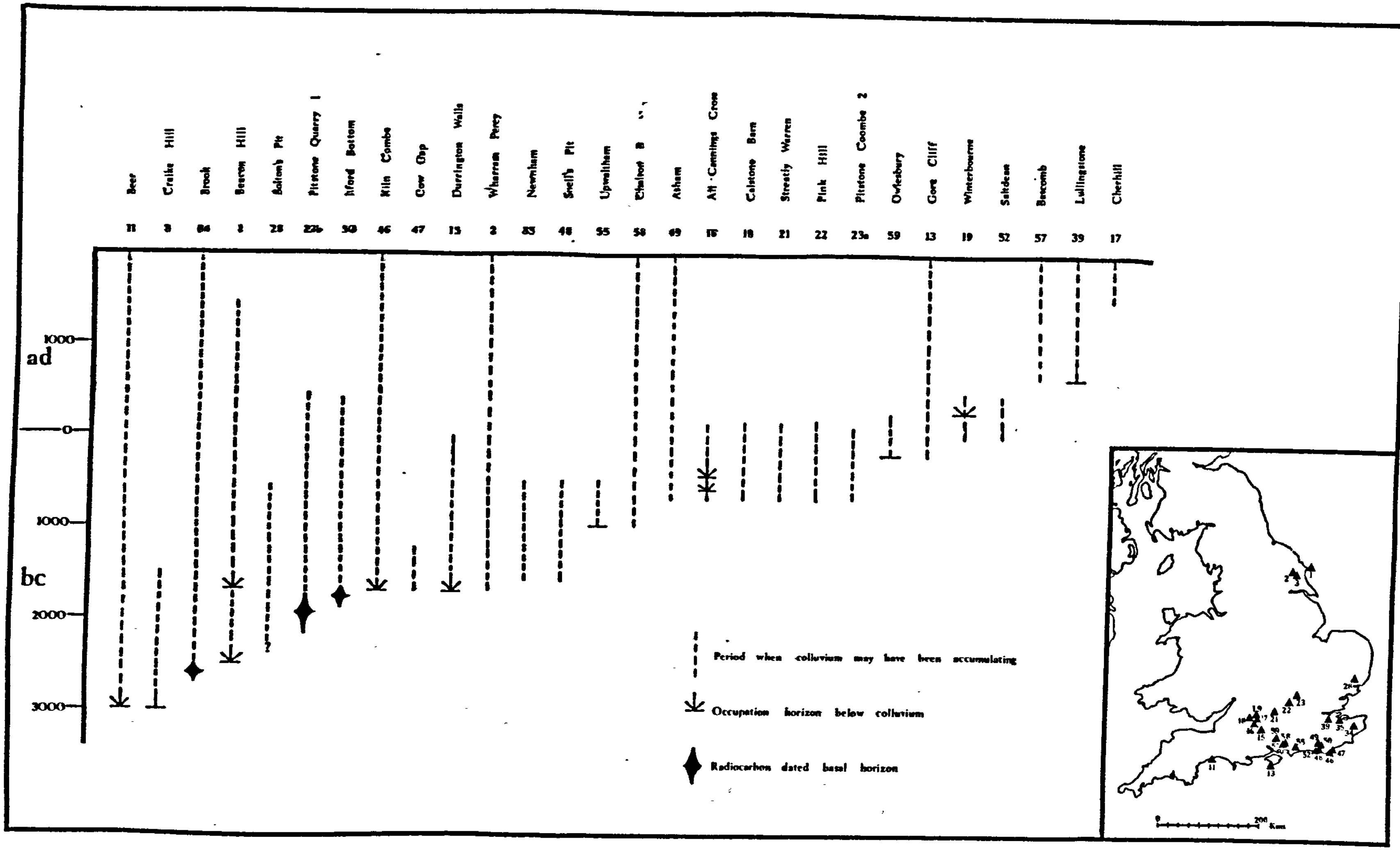

Fig.77.An attempt to plot the approximate dates at which colluviation was initiated and was occurring. The sites are numbered as on Fig.2 and Appendix 1 where bibliographical references are given. The inset shows the distribution of sites.

Mediterranean (Vita-Finzi, 1969) to the British Isles (Potter 1976b). Other writers envisage that it may have played a subsidiary role alongside land-use factors. Thus Kerney et al. (1964, p.190) hypothesised that the wetter Sub-Atlantic period could have contributed to acceleration in colluviation at Brook, and more recently Evans and Jones (1979, p.213) have hinted that at some sites, such as Mount Pleasant henge, colluviation (in this case in the ditch) was occurring at periods when precipitation was higher than previously.

A possible way of detecting the importance of climatic factors is to search for evidence of temporal clustering of the dates when colluviation was initiated and seems to have been occurring. An attempt to do this has been made on Fig.77. It should be said that many of these valley sediments are not all that closely dated and one cannot always be confident that because artifacts of a certain date are buried by colluvium that process was initiated soon after their deposition. For these reasons it has been necessary to exercise an element of subjective judgement in constructing this diagram; none the less it is not considered that this negates the general conclusions. What it shows is that colluviation has been initiated and has occurred at virtually all times between the Neolithic and the Post-Medieval period. Particularly significant is the fact that some of the most accurately dated and intensively studied sites, such as Brook, Pitstone Quarry 1, Itford Bottom and Kiln Combe, have hillwash of the Neolithic or Bronze Age. Thus they fall into what is generally considered to be the fairly dry Sub-Boreal period. The succeeding Sub-Atlantic, normally considered as a period of increased wetness (Lamb 1977,

Plates LVI and LVII. Soil erosion at the head of a small dry valley at Saltdean, East Sussex (TQ 379031). Fine particles have been removed from the rilled and gullied area leaving a marked concentration of flints.

p.373), has also been regarded by some writers as the main period of colluvial deposition. There are indeed a grouping of sites (49, 16, 18, 21, 22, 23a and 59) which are known, on the basis of small collections of artifacts, to contain Iron Age material. Of these only All Cannings Cross and Owslebury have produced clear evidence that colluviation was initiated during this period. Although the number of sites is small, and the dating evidence from some of them shaky, there does not seem to be the clear chronological pattern we would expect if climatic change had been a major factor. From this we can conclude that, in the present state of knowledge and dating, British valley sediments are not particularly promising sources of proxy, that is indirect, palaeoclimatic data. There is, however, a good deal of evidence to underline the importance of unusually heavy storms. We are not talking about catastrophic events of Lynmouth proportions which are entirely ruled out by the stratification, of both the sediments and artifacts, showing they built up fairly slowly. What we are concerned with are much smaller scale events, like the storm witnessed by chance at Chalton (p.321), which might often go unnoticed. Another example is an area of erosion observed in December 1980 at Saltdean, East Sussex (Plates LVI and LVII). This erosion had occurred since the sowing of the winter crop, most probably during a single heavy storm. It was at the head of a dry valley where there is a cap of Clay-with-flints and the erosion problem at this point was sufficiently serious for the landowner to have constructed a pond to prevent the muddy water flowing into gardens and houses downslope. Heavy storms of this kind would each make a modest contribution to the sediments on the valley floor but their cumulative contribution over millennia might be considerable. It

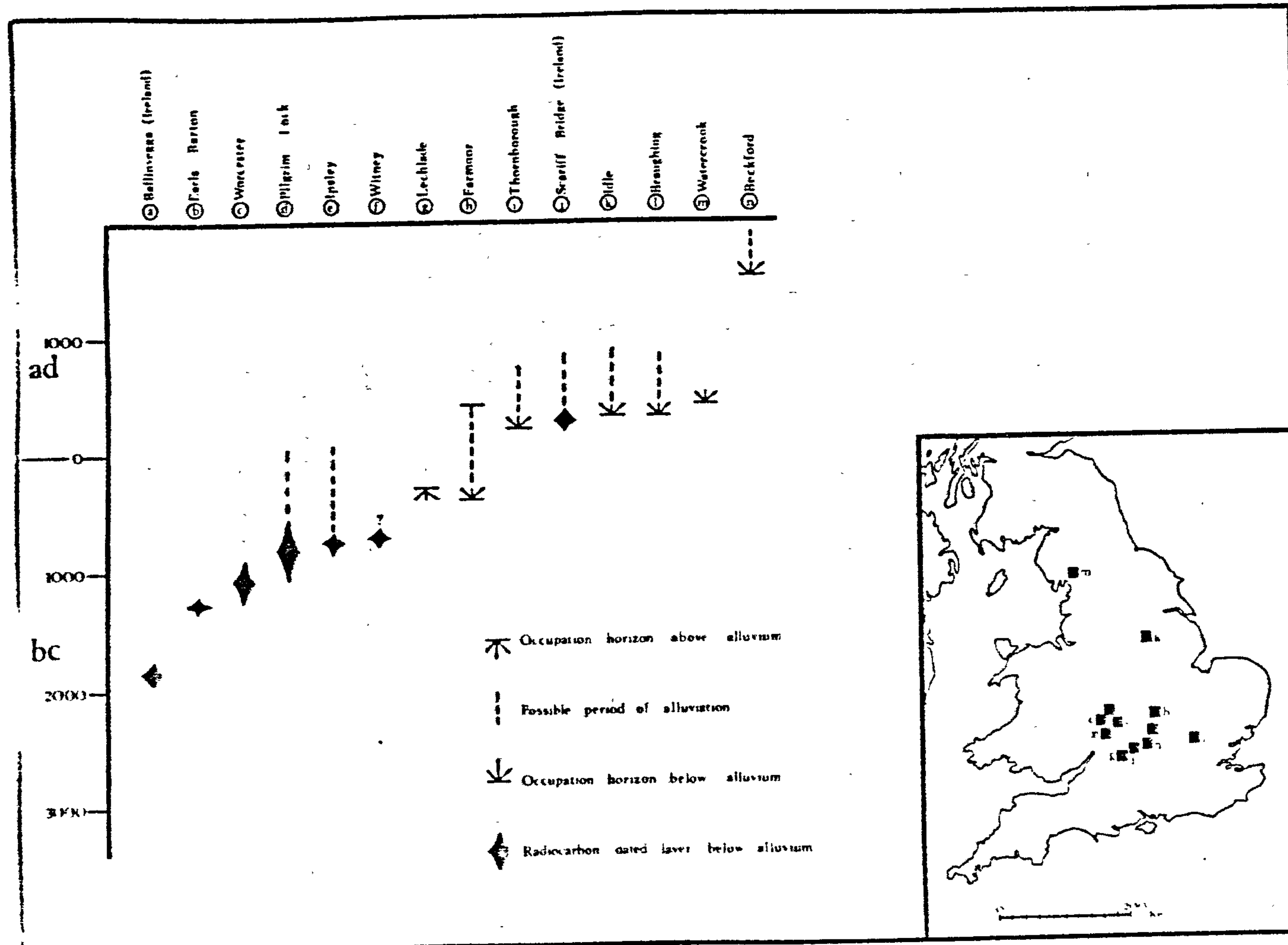

Fig. 78. An attempt to plot the approximate dates at which the deposition of recent mineral rich floodplain alluvium was initiated and was occurring; bibliographical references to these sites will be found on pages 15-20.

is perhaps in this way that climatic variables may turn out to be most important because the seasonal distribution of heavy storms is something which is likely to have been affected by relatively small scale climatic change. It does not necessarily follow, however, that the increasing incidence of heavy storms indicates an overall higher annual or seasonal rainfall, as has already been pointed out, in relation to other climatic zones by Martin (1963) and Raikes (1967, p.28).

The chronological distribution of colluvial deposits also seems to contradict the suggestion of Bradley (1978, p.123) and others that hillwashing is predominantly a process of later prehistory. The argument presumably is that as time went on pressure on land would increase and over-use would lead to colluviation. This proposition is logical enough but it is not substantiated by the evidence. What seems to have happened is that the critical thresholds were passed at widely differing times from one valley to the next depending on local factors.

When we compare the times at which colluviation was occurring with the dates of alluvial sequences (Fig.78) previously reviewed (pp. 15-20) interesting contrasts emerge. The smaller number of reasonably dated alluvial sequences seem to be a good deal later than the earliest colluviation. With the exception of one second millennium date from Ireland, the earliest deposits are late Bronze Age/early Iron Age. In particular there are a number of sites where the deposits seal Roman levels, and further examples are discussed by Potter (1976b) and Gater (1979) in relation to their hypothesis of post-Roman climatic change. The diagram shows that the deposition of mineral rich flood-plain alluvium has occurred over quite a long period, this itself argues for the importance of local land-use factors. That being so it may seem curious that the alluvial deposits seem consistently to be coming out as later in date than some of the colluvial fills. This is all the more puzzling because colluviation seems likely to have been a significant feeder of material for subsequent alluvial transport and deposition. The apparent discrepancy may be explained in two ways. Firstly colluvial deposits are fairly localised in origin, whereas alluvial deposits are likely to reflect larger scale changes affecting a significant portion of the catchment. Even if the original clearance of some areas took place at a comparatively early date it may only have been much later, with the creation of continuous expanses of arable land, that mineral material found its way into streams in considerable quantities. Shotton (1978, p.31) has argued along similar lines in the case of the Severn and Avon sediments and pointed out that the inception of winter-sown crops with late autumnal ploughing might have led to increased soil erosion. The second factor concerns the geographical distribution of the sediments: the colluvial sequences are basically on chalk and limestone in the South East (Fig.77) whereas the alluvial sequences are mainly in the major river valleys and clay vales of the South Midlands (Fig.78). What we may be observing is the more intensive exploitation of these latter areas in later prehistory.

(v) <u>The effects of colluvial processes upon the distribution of archaeological sites</u>.

A number of archaeologists have, in recent years, drawn attention to the possibility that sites may be concealed below colluvial or alluvial deposits. For instance, Simpson (1971, p.132) suggested this as a possible explanation for the paucity of Beaker settlement sites, and Potter (1976b, p.213) concluded that valleys in the South Etruria field survey areas were blank of settlement because of alluviation. The Beaker site in Kiln Combe has now provided us with a specific instance of a settlement completely hidden, as far as surface survey is concerned, by colluvium. Two parallel instances have been recorded in the course of this survey, the burial of probable Neolithic occupation horizons at Brook, Kent (Kerney, pers. comm.) and of Bronze Age features at Upwaltham, West Sussex (Bradley 1967). Other sites, like All Cannings Cross and Durrington Walls, though not completely concealed by it, owe their unique preservation to colluvium. Immense problems exist in locating the totally buried sites but success in doing so will be rewarded by their much better preservation and palaeoenvironmental record.

Just as sites have been buried so also have land-use episodes and artifact scatters. The significance of this lies chiefly in the rapidly evolving methodology of field walking programmes which are increasingly, and rightly, emerging as key aspects of archaeological survey. The full significance of surface artifact scatters is at last being recognised and appropriate techniques evolved to record them (Foard 1978). In environments of deposition interpretation of these two dimensional, roughly horizontal, artifact patterns needs to take account of data in the vertical dimension revealed by these trenches. It was shown that Romano-British artifacts in Itford Bottom formed a thin, and totally misleading, veneer obscuring a much earlier history of land utilization. On the same basis it is obviously not possible to deduce reliable dates for field systems on the basis of surface sherd scatters.

The amount of erosion in the study areas and the quantity of artifacts contained in the eroded sediment on the valley floors may help to explain perplexing anomalies in the archaeology of the downland. In their recent survey of Stonehenge and its environs the Royal Commissioners (1979, p.XII) record that Neolithic sites are only preserved where they were covered by later monuments and this may suggest that other sites have been lost by erosion. Manby's (1974, 1975) work on Neolithic sites on the Yorkshire Wolds suggests that the pits from which much of the material was recovered are probably "the surviving features of occupation sites whose shallower elements, floors, hearths and postholes have been eroded away". The same sort of thing was suggested by excavations at Bishopstone, Sussex (Bell 1977) where Neolithic occupation was represented only by large pits and hollows, the Iron Age settlement by ditches, pits and, generally large, postholes, and the Anglo-Saxon settlement by buildings of much smaller postholes. Circular huts, or other absolutely convincing structures, were absent from the Iron Age settlement, reminding us that at Danebury (Cunliffe 1976d) these more ephemeral structures only survive where they were protected, both by extensions to the rampart and by a colluvial build-up against the inside of the rampart. Features on chalk sites have clearly been eroded and truncated, and it may not be too fanciful to suggest that this has totally purged some, perhaps many, sites from the archaeological record.

In the light of all this evidence for post-depositional

	Estimated m^2 soil in whole cross section	Approximate length of valley floor/lynchet	Approximate estimate of m^3 of colluvial soil in valley/lynchet	Estimated depth of eroded soil	m^3 excavated by hand	TOTAL artifacts	TOTAL sherds	TOTAL flint artifacts	artifacts per m^3	Sherds per m^3	flint artifacts per m^3	estimated possible number of artifacts in valley/lynchet
Kiln Combe valley Section	90	2,500 m	225,000	18	45·6	3,109	1,357	1,507	68·2	29·7	33·0	15×10^5
Itford Bottom valley Section	59	1,300 m	76,700	18	30·5	2,103	517	1,161	68·9	16·9	38·1	5×10^5
Chalton Trench A valley Section	22·6	8,000 m	180,800	2·5	3·2	366	21	174	114·3	6·6	54·4	20×10^5
Chalton Trench B valley Section	60	1,000 m	60,000	9	15·2	3,105	930	510	204·3	61·2	33·5	11×10^5
Bishopstone Lynchet Section	15·4	170	2,618	10	30·8	1,985	571	1,195	64	18·5	38·79	167,000

Table XXVIII. Numerical data relating to the possible amounts of colluvium and artifacts in each of the valleys investigated. For comparison data from a lynchet at Bishopstone (Bell 1977, pp.251-266) is included.

change we need to give some thought to exactly what is meant by the concept of an archaeological site. Its location might be defined in a variety of ways - by surface sherd scatters, features, air photography, etc. Recently, with the growing interest in settlement patterns and the concomitant blossoming of field surveys there is a growing tendency for sites to be identified on the basis of very small numbers of sherds. Caution needs to be exercised in doing this as is suggested by the large amounts of artifactual material reported here from non-settlement site contexts. The total number of artifacts in the trenches (Table XXVIII) ranged between 68 and 204 to the cubic metre. It is particularly salutary to do a very crude calculation of the possible amount of colluvial soil in each valley and its potential artifact content. This suggests that some of the valleys may contain tens of millions of pieces of artifactual material. Clearly these figures make a number of very dangerous assumptions regarding the typicality of the trench sites, but even if the results are in error by a factor of 10, 20 or more, they have enormous implications for interpretation of surface sherd scatters from field surveys. Perhaps under some circumstances the eroded colluvial soil from a settlement site may contain more artifacts than the topsoil on the site itself.

Erosion has obviously not affected all portions of the downland topography to an equal degree. Fig.79 shows a typical sequence of chalk downland soils and attempts to define three basic levels of preservation:-

(A) Zone of major destruction on the hilltop and hillslope areas with shallow rendsina soils (e.g. of the Icknield Series). Occupation horizons and living floors are most unlikely to survive

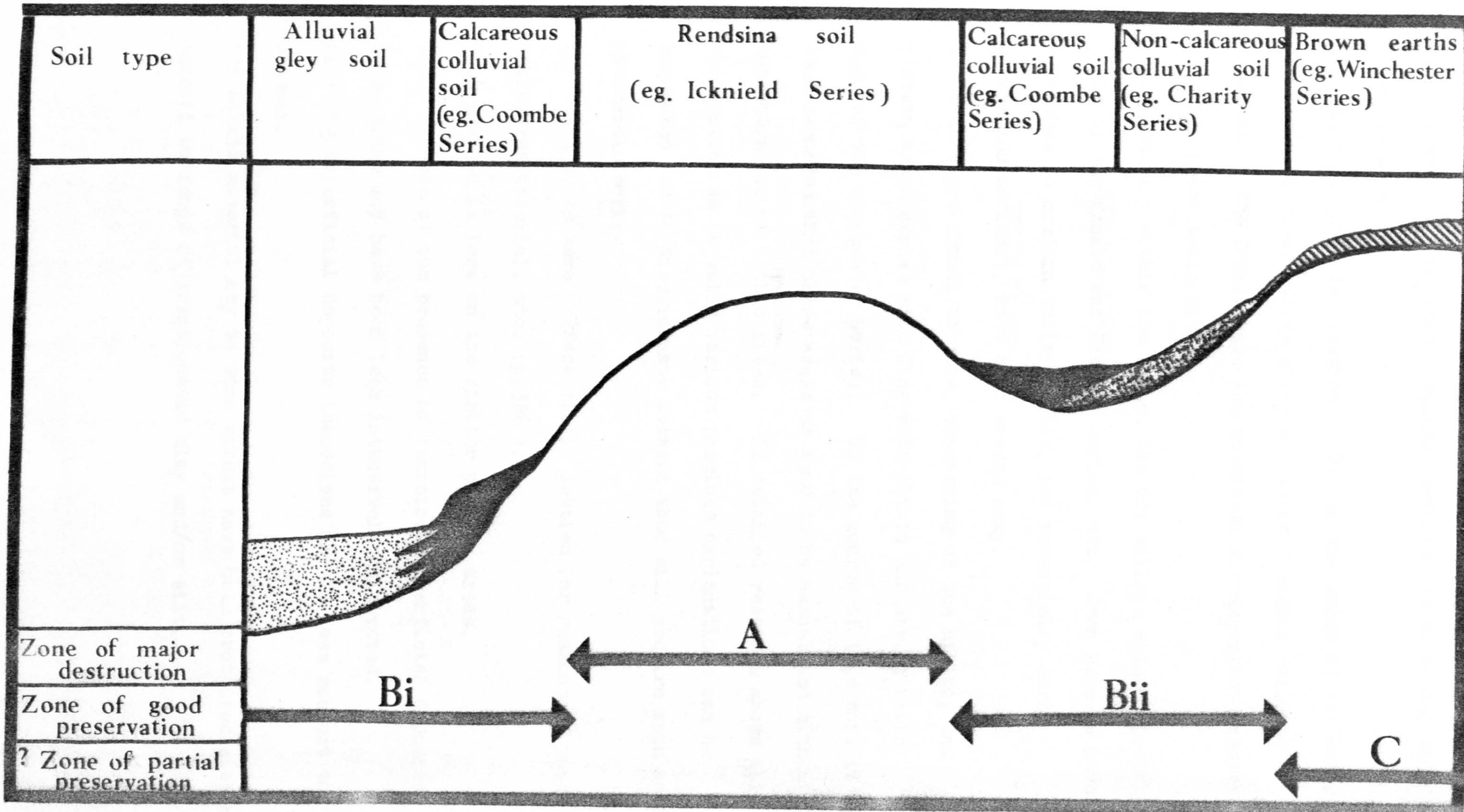

Fig.79. Suggested relationship of soils on downland topography to post-depositional processes affecting the archaeological record.

and the earlier the archaeological features the more they will have been truncated.

(B) Zone of good preservation. (Bi) On the edges of the Downs, the alluvial river valley soils and their fringing colluvial deposits. The former have the potential for excellent preservation of early prehistoric sites.

(Bii) Actually within the Downs, the dry valleys with colluvial soils of the Coombe and Charity Series, etc. Even here we have seen that in certain valleys, soils, and potentially early occupation horizons, have been eroded away.

(C) A more problematical zone, consisting of the hilltop and plateau areas capped with Clay-with-flints and having soils e.g. of the Winchester Series. In the course of this work it has been recorded that these areas do tend to be associated with a concentration of lithic sites. If detailed research shows this observation to be valid various possible explanations can be suggested but to discriminate between them will require much more systematic work:-

(i) These areas were preferentially settled for reasons of water table, raw material, etc. (p.386).

(ii) Erosion is less on the flatter plateau areas.

(iii) Because of the presence of tenacious superficial deposits these areas may have been less intensively cultivated.

(iv) The superficial deposits themselves may be less subject to erosion.

(v) Lithic material may to some extent have been protected within subsoil horizons of translocated clay and/or silt.

(vi) Postglacial vegetational and pedological changes on the South Downs.

Data from the three study areas, when combined with earlier work, enable us to sketch some of the broad outlines of the Postglacial environmental history of the South Downs (Fig.80). In doing this we must remember that the number of sites investigated using palaeoenvironmental techniques is still very small and there is no reason why they should be typical of the downland landscape as a whole. This is particularly a problem with molluscan studies which, in any case, reflect fairly local conditions.

This study has confirmed earlier evidence that the climax vegetation of the South Downs was closed woodland. The only traces of this which remained in the trenches were subsoil hollows, interpreted as fossil tree holes and producing a more or less exclusively shade tolerant fauna. Preservation of the hollows varied considerably, some of the several examples in Itford Bottom were quite deep and well preserved whereas in Kiln Combe and Chalton Trench a there were only single shallow examples with the appearance of truncated remnants. No such features, with a surviving mollusc faunas, were encountered in Chalton Trench b.

Possible anthropogenic effects are in evidence as early as the Mesolithic period at the Vale of Brooks, linking, perhaps, with the much more tentative evidence for burning in that period at Itford Bottom. A regrettable feature of this study is that, subsoil hollows apart, none of the valleys preserved any evidence of pre-Bronze Age stratigraphy. Consequently we have no new data relating to the environmentally crucial Neolithic period for which we have to rely on evidence from recent archaeological excavations. A number

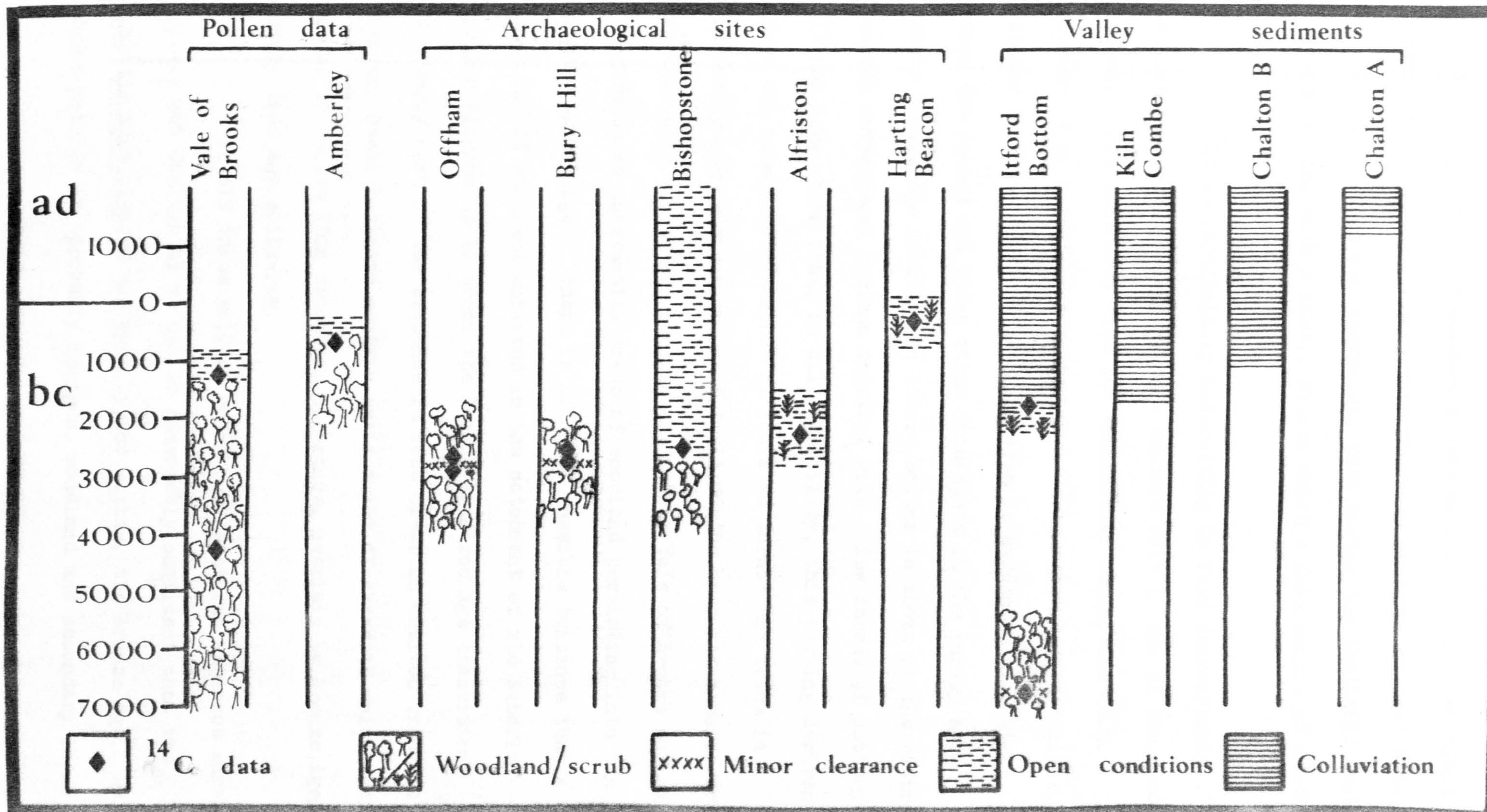

Fig.80. The chronology of Postglacial environmental change on the Chalk of the South Downs.

of the early Neolithic monuments were constructed in a woodland environment although others have produced evidence of clearance (p. 67). It seems, therefore, that during the Neolithic period we are dealing with a mosaic within which a fair amount of woodland remained.

It is particularly interesting to find Beaker/early Bronze Age populations playing a dynamic role in two of the study areas; this contrasts with the traditional assumption (e.g. Curwen 1954, p.155) that these people were nomadic pastoralists. Beaker activity in the Kiln Combe area is evidenced by pottery from the trench and three other find-spots in the survey area. Early Bronze Age activity in Itford Bottom is shown by the radio-carbon dated basal horizon together with a few sherds of pottery. It has been shown that, in all probability, this burning derives from the secondary clearance of isolated shrubs and trees in a basically open environment. Not all of the area had been cleared by this stage, however, because the nearby Vale of Brooks pollen diagram shows substantial areas of woodland persisting into the Middle Bronze Age. There is also the possible evidence that a fair bit of woodland survived in the catchment of the Amberley pollen diagram up to about the Bronze Age/Iron Age transition. The early part of the sequence is less clear in Chalton Trench b but the basal horizons contain quite a lot of charcoal which again seems to derive from secondary clearance, overlain by Bronze Age/ early Iron Age colluvium.

In all three valleys where a prehistoric sequence survives (i.e., not Chalton a) we can be reasonably confident that the valleys were cleared and open by, or during, the Bronze Age. No doubt patches of, probably managed, woodland and secondary scrub remained either as a resource or in areas unsuitable for other forms of land-use. Henceforth the evidence suggests a dry open environment fairly intensively used for arable purposes with occasional pastoral episodes up to the present day.

Pedological changes which proceeded in tandem with this vegetational history may be considered in both quantitative and qualitative terms. Faced with a thickness of colluvial sediment it is all too easy to make unwarranted assumptions about the amount of erosion represented. Hence, for all their faults, the crude attempts made here to actually quantify the possible depth of erosion represented by the sediments. The figures arrived at (Table XXVIII) range from 2.5cm - 18cm. of eroded soil. We can discount the lower figure which comes from the anomalous Chalton Trench a. The other figures suggest we are dealing with averages of between 10 and 20cm. It has already been emphasized that these figures take no account of factors like solution and the movement of sediment down the valley axis. Solution remains a largely unknown factor in urgent need of research. Movement down the valley axis emerges from this study as a factor of some importance. Clearly it accounts for the low figures from Chalton Trench a but its more widespread importance is underlined by the erosion of presumably fairly deep, woodland soils. To what extent sediments have been totally flushed out of the dry valley systems, as opposed to localised, remains to be established. One way of doing this in the future would be assessment of the colluvial contribution to alluvial sediments in chalkland river valleys for which purpose the alluvium edge colluvial deposits (Fig.1) will need to be investigated.

Arguably of greater importance than this consideration of the amount of sediment eroded are qualitative considerations. Each valley has served to emphasize the contribution of Pleistocene loess to the soils of the South Downs, and has shown that this made up a very high proportion of material eroded during the Postglacial. This was particularly true of Kiln Combe and Chalton but even, to a lesser extent, of Itford Bottom where discrete superficial deposits are virtually absent. Even thin superficial deposits can exert an important influence on vegetation, as the chalk heaths show. In some areas these superficial horizons may have been partly eroded away and partly also perhaps mixed by cultivation with calcareous subsoil material. We can, in fact, observe a trend in each of the trench sections towards a progressive thinning of superficial deposits and the consequent erosion of a higher proportion of calcareous material in the more recent layers. Thus, as time went on, there seems to have been a gradual extension of the shallow rendsina soils.

Distinctive silty clay loam horizons have been encountered in each of the valleys: Kiln Combe, Layer 2; Itford Bottom, Layers 10 and 11; Chalton a Layer 2; Chalton b, Layer 3. These are partly Pleistocene in origin, particularly in the case of Kiln Combe, but the evidence from the other two valleys demonstrates that their present form is also partly the result of Postglacial pedogenesis. The most important processes seem to have been the translocation of clay and silt partly as a result of prehistoric agriculture thus leading to the development of 'agric' horizons (p.363) which have subsequently been truncated by erosion.

(vii) Responses by prehistoric communities to these soil changes.

The very existence of colluvial deposits attests to a gradual loss of soil structure which probably mainly occurred because the organic matter content was gradually depleted by prolonged cultivation. Increasingly the maintenance of a sufficient depth of fertile soil must have become a problem for prehistoric cultivators, and there is a growing body of evidence that they took specific steps in response to this problem. Heavy applications of domestic and farmyard manure seem likely to be the main mechanism by which the very large numbers of artifacts became incorporated in valley sediments, lynchets and 'Celtic' fields in general. Some of the abundant finely divided charcoal may represent wood ash deliberately put on the fields as a fertiliser. Marling was also practised in some areas where superficial deposits overlay chalk. There was evidence of Roman marling pits among the 'Celtic' fields on Bullock Down (Drewett 1977) and here such measures would have become increasingly desirable as the more fertile loess-rich surface horizons were eroded away and cultivation had increasingly to cope with the rather intractable sub-surface clay loam and flints layer.

Other measures are attested from beyond our study areas. Coastal sites, including the chalkland settlement at Bishopstone, seem to have taken fairly extensive advantage of the fertilising properties of seaweed (Bell 1981). There is also the possibility that bracken was used as a fertiliser on some chalkland sites in Wessex (Dimbleby and Evans 1974, p.129). Manure heaps are attested by beetle faunas on the Farmoor settlement in the Thames Valley (Lambrick and Robinson 1979, p.109 and p.117). We also know that, at least as early as the Iron Age, members of the Leguminosae were present at sites such as Gussage All Saints (Wainwright 1979, p.172) and Glastonbury (Clarke 1972, p.855). The fact that these crops with nitrogen fixing properties were grown implies a gradual decline in soil nitrogen on some sites (Jones 1978, p.109) but when used as part of a rotation they would have helped facilitate continuous cultivation.

We also need to consider whether specific attempts were made to retard the process of soil erosion. Whether deliberately or not, lynchets do this to some extent although the traditional assumption has been that they are accidental artifacts of the erosion process. A different view was taken by the soil scientist E. J. Russell (1946, p.62), who wrote "the old method of doing this (stopping erosion) was by a system of terracing such as the early prehistoric lynchets on the Chalk Downs of England". There can be no doubt that terracing is a very efficient way of reducing erosion, particularly that by raindrop splash action which is likely to be one of the most important colluvial processes. Both the structure and stratigraphy of lynchets completely rule out the possibility that we are dealing with deliberately constructed terraces made with pick and shovel. The spade marks at Gwithian (Megaw et al.1961) remind us, however, that a certain amount of hand digging may have gone on within 'Celtic' fields. For the most part lynchets and valley sediments alike clearly grew up slowly by steady increments to their surface. The real question is whether that build-up was encouraged or accidental. Barriers such as fences, ditches, banks, etc., have been traced below a number of lynchets (Fowler and Evans 1967; Bell 1977, p.251) and obviously these could have been constructed:-

(A) as land boundaries

(B) to help retard soil erosion

(C) for both purposes.

More intriguing still are exceedingly flinty lynchets like the one found in Itford Bottom (Plate XXXIV) where the associated lynchets had been exploited as quarries by later flint diggers. The same thing apparently went on into recent times at Chalton (J. Budden, pers. comm.) where we have recorded an exceedingly flinty lynchet just north of Trench a. William Cunnington (1870, p.192) writing of Wiltshire in the nineteenth century states that 'it is now a common practice to dig these lynchets for flints'. Other exceptionally flinty lynchet banks have been recorded on Smacan Down, Dorset, Corton Down, Wiltshire (Fowler and Evans 1967, p.298), the Berkshire Downs (Mills 1949 and Richards 1978), and more recently around the Bronze Age settlement at South Lodge, Dorset (Bradley, pers. comm.). In the Fyfield and Overton Down survey area (Bowen and Fowler 1962, p.104) there was evidence for lines of sarsens, almost walls in places, below the lynchet banks. These are obviously the result of stone clearance associated with the laying out of the fields. The very flinty lynchets may perhaps be partly explained by the washing away of fine soil, as is illustrated by a recent erosion episode at Saltdean (Plates LVI and LVII). The major factor, however, is almost certainly deliberate stone clearance during long continued cultivation. As the surface horizons were gradually eroded away stoniness would increasingly have become a problem, as was demonstrated by the valley fills. It seems logical, therefore, that prehistoric communities would have responded to the linked problems of erosion and stoniness by deliberately casting the stones from field clearance onto the lynchet banks and so help to retard downslope movement.

In the case of later Medieval strip lynchets there is further evidence that an element of deliberate construction augmented natural processes of plough erosion. This was suggested both on the Chalk in Wiltshire (Wood and Whittington 1959, p.336) and also by the stony fill of some of the strip lynchets on Carboniferous Limestone in Upper Wharfedale (Raistrick and Chapman 1929, p.173). Further excavations of lynchets of all periods should give special consideration to this problem, and future surveys might usefully consider the spatial distribution of stony lynchets in relation to slope, superficial deposits, etc.

In Britain 'Celtic' fields have been recognised for many years and consequently our interpretation may have become a little restricted by traditional assumptions. Interestingly enough they are now being recognised over a wide area of North Western Europe, where they are interpreted by continental archaeologists much more in terms of a response to the problems engendered by long continued cultivation. Brongers (1976, p.74) argues that some lynchets and field banks result from clearance of exhausted soil to the field edge to be replaced by manure. Groenman-van-Waateringe (1979), discussing the 'Celtic' field system on the heathlands of North West Germany suggests that they represent attempts to counter excessive wind erosion of the fields. It is not so much these specific hypotheses which are relevant to the problem in the British Isles; far more interesting is the radical new approach now being taken by continental scholars.

The evidence for prehistoric manuring, marling, stone clearance and possibly soil conservation, reviewed in this section, reveals early agriculturalists in a rather unaccustomed light. Recent years have seen our attitudes to them tending to become a little jaundiced by the realisation that a whole range of habitat types, most notably perhaps heathlands and moorlands, have been made very much less productive as the result of the activities of prehistoric communities. The importance of this conclusion has perhaps tended to overshadow and obscure the more constructive aspects of the interaction between early farmers and their land. Without this the inevitable damage to certain ecosystems might well have been much worse. Indeed both Jacks and White (1939) and Hyams (1952) in their pioneering surveys of soil erosion argued that it had been kept within bounds in Western Europe because here was an area where agricultural systems had evolved slowly in harmony with their environment.

(viii) Soil erosion as a possible explanation for some of the settlement pattern changes on the Chalk.

The foregoing shows that we are guilty of a considerable distortion if we present prehistoric farmers as vandals who were profligate with their pedological resources. The fact remains that soil erosion did occur and quite probably the types of soils were changed by this over reasonably large areas of the Chalk. What we now need to consider is whether these changes help to account for some of the longer term changes in land-use and settlement patterns. One wonders, for instance, whether areas which once had deeper loess soils might have been specifically selected by early farmers. This certainly seems to have been the case with the Bandkeramic farmers of the continent (Milisaukas 1978, p.98) and Wooldridge and Linton (1933) have shown a correspondence between loam terrains and prehistoric settlement. Perhaps therefore, Beachy Head, and other of the fairly densely settled plateau areas, were originally attractive to prehistoric farmers because of deeper loess soils. Bradley (1979) has suggested that only downland sites on brickearth sustained intensive occupation after about the Bronze Age, and it seems likely that the intensity and longevity of settlement at both Chalton and Bullock Down is explained partly by the survival of superficial deposits with loess surface horizons.

The South Downs carry the densest concentration of prehistoric sites in Sussex: in contrast later Saxon, Medieval and modern settlements are concentrated on more low-lying valley and vale areas. The earliest explanation offered for the distribution of prehistoric sites was that the lighter soils were more attractive to prehistoric communities. Primarily this was held to be because they were clear of dense woodland, a hypothesis which is clearly no longer acceptable. The factor which caused the shift of settlement away from the Chalk was considered to be the introduction of more advanced ploughs capable of cultivating the low-lying clay lands (Curwen 1954, p.312). This we must also question now that we know that prehistoric ards were capable of dealing with deposits as tenaceous as Rhaetic Clay (Everton and Fowler 1978).

Recently Taylor (1972) has drawn attention to the accumulating evidence for prehistoric settlement on lowlands surrounding the Chalk in Dorset (Taylor 1970) and Cambridgeshire (Taylor 1973). Similarly there is an increasing body of evidence for prehistoric activity on the areas surrounding the South Downs. This trend is well represented by Tebbutt's (1974) survey of lithic sites in Ashdown Forest and, as long ago as the 1930's, Wooldridge and Linton's (1933) maps were demonstrating a considerable concentration of artifactual, non-settlement, evidence on the Coastal Plain. In many parts of the country Taylor's idea has proved a most stimulating one, prompting us to extend archaeological research beyond the traditional areas of field monument survival. Some danger exists, however, that we will come to over-emphasize the marginal nature of the chalklands in prehistory. Colluvial deposits in lynchets and the valleys reported here do seem to imply fairly steady and continuous cultivation of many areas. Consequently we are still to some extent forced back to enquire how it is that areas intensively utilized in prehistory were very much less intensively utilized during historic times. Soil erosion may be a partial answer. It may be that throughout prehistory and the early historic periods there occurred a gradual, but progressive, reorientation of the focus of agricultural activity away from the Chalk. One of the first concrete manifestations of that trend is the low ground distribution of Romano-British villas; later, during the Anglo-Saxon period, the pattern is reinforced by the settlements recorded in the charters and Domesday Book, many of which survive today as villages.

If that shift, caused by a combination of soil erosion and innovation in plough type and agricultural technique, is a reality it may help to explain the contrasting chronological and temporal distributions of colluvial and alluvial deposits. Some of the chalkland colluvial deposits begin to be laid down soon after the introduction of farming (Fig.77) whereas many of the alluvial valley sediments appear to be Romano-British and later. Possibly therefore the large scale and relatively intensive land-use of the clay vales and major river valleys is a somewhat later phenomenon.

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Appendix 1.

List of the main documented valley bottom colluvial deposits in Britain. The spatial distribution of these sites is shown on Fig.2, and their approximate chronological distribution, where there is some evidence of date, on Fig.77.

No.	Name	Bedrock	References	Date and details
1	Beacon Hill Yorkshire	Glacial moraine overlying chalk	Moore 1963 Manby 1975 p.45	Occupation floors with Ebbsfleet and Beaker pottery
2	Wharram Percy Yorkshire	Chalk and chalk solifluction deposits over clay	J. Hurst and G. Foard pers. comm.	Colluvial deposits with early prehistoric to Post-Medieval artifacts
3	Craike Hill Yorkshire	Flinty gravel overlying chalk	Manby 1958	Neolithic and Beaker pottery
4	Fissure Cave Derbyshire	'limestone'	Turk 1966	Late Neolithic
5	Cwm Nash Glamorgan	Liassic limestone	Evans, et al. 1978 French 1975	Undated
6	Nash Point Glamorgan	Liassic limestone	Evans 1972, p.305	Undated
7	Brean Down Somerset	Carboniferous limestone	Ap Simon et al. 1961	A hillside rather than valley deposit, with blown sand and colluvium. Bronze Age to recent.
8	Hawkesbury Upton, Glos.	Jurassic limestone	Findlay 1976, p.16	Undated
9	Chedworth Glos.	Jurassic limestone	Atkinson 1957, p.224	Pre-Roman
10	North Leigh Oxon.	-	Atkinson 1957, p.224	Pre-Roman
11	Beer, Devon	Chalk	MacAlpine Woods 1933	Accumulating in Neolithic, Roman and Medieval periods.
12	Piggledene, Wiltshire	Chalk	Fowler 1963, p.350	Prehistoric pottery

No.	Name	Bedrock	References	Date and details
13	Gore Cliff Isle of Wight	Overlies Upper Greensand and Lower Chalk	Preece 1980	Late First or early Second century artifacts
14	Downton, Wiltshire	River gravel and clay	Rahtz 1962	Post Neolithic
15	Durrington Walls, Wiltshire	Chalk	Wainwright and Longworth 1971	Post Beaker
16	All Cannings Cross, Wiltshire	Chalk	Cunnington 1923	Accumulating in Iron Age.
17	Cherhill, Wiltshire	Coombe Rock overlying Gault clay	Evans et al. 1978 White 1925, p.90	Accumulating in Post-Medieval period
18	Calstone, Barn Combe, Wiltshire	Chalk	Wood and Whittington 1959, p.333	Upper levels accumulated in Iron Age or later.
19	Winterbourne Wiltshire	Chalk	Evans 1972, p.312	Contained some Iron Age pottery
20	Little Hinton, Wiltshire	Chalk	B. W. Sparks unpublished work	Undated
21	Streatly Warren, Berkshire	Chalk	Mills 1949 Rhodes 1952	Accumulating in Iron Age
22	Pink Hill, Bucks.	Chalk	Evans 1972, p.312	Contained some Iron Age pottery
23a	Pitstone, Bucks. Coombe 2	Chalk	Evans 1966(b) pp.355-357	Early Iron Age sherds at base
23b	Pitstone, Bucks. Quarry I	Chalk	Evans and Valentine 1974, p.343 Valentine 1973	Hillwash initiated by clearance, c 1960 ± 220 b.c. (HAR-327)
23c	Pitstone, Bucks. Coombe I	Chalk	Evans 1966(b), p.357	Iron Age sherd
24	Pegsdon, Herts.	Chalk	Sparks and Lewis 1957	Undated
25	Coombe Bottom, Herts.	Chalk	Waton 1977	Undated

No.	Name	Bedrock	References	Date and details
26	Wing Hall, Herts.	Chalk	Waton 1977	Undated
27	Barrington, Cambs.	Boulder clay overlying chalk	Sparks 1952	Undated
28	Bolton's Pit, Suffolk	Eocene Clay	Moir 1927	Lower levels accumulating in Neolithic to Bronze Age
29	North Cliff Broadstairs, Kent	Loess and chalk meltwater deposits overlying chalk	Kerney 1965	Undated
30	Pegwell Bay Kent	Loess overlying chalk and Thanet Beds	Weir <u>et al.</u> 1971 Pitcher <u>et al.</u> 1954 Kerney 1965	Postdates 4170 $\pm$ 250 b c Contains Neolithic artifacts
31	Dour Valley, Dover, Kent	Chalk	White 1928	Stratigraphy related to Neolithic and Roman artifacts
32	Dover Hill, Folkestone, Kent	Chalk	Kerney 1963, p.204	Undated
33	Castle Hill, Folkestone, Kent	Chalk meltwater deposits overlying Gault Clay	Kerney 1963, p.209	Undated
34	Devils Kneading-trough, Brook, Kent	Chalk	Kerney <u>et al.</u> 1964 Barker <u>et al.</u> 1971, p.169	Hillwash initiated by clearance <u>c.</u> 2590 $\pm$ 105bc Neolithic artifacts
35	Champion court, Newnham, Kent	Chalk	Worssam 1963, p.112	Accumulating during Bronze Age
36	Upper Halling, Kent	Chalk	Kerney 1963, p.211	Undated

No.	Name	Bedrock	References	Date and details
37	Holborough, Kent	Chalk	Kerney 1963, p.213	Undated
38	Halling Station, Kent	Chalk	Kerney 1963, p.218 Dines *et al.* 1954, p.126	Undated
39	Lullingstone Kent	Chalk	Cornwall 1958 p.55	Fourteenth century or later
40	Ebbsfleet Valley, Kent	Coombe Rock river gravels and alluvium	Burchell and Piggott 1939 unpublished papers in British Museum and B.M. Natural History.	Various Mesolithic and later artifacts
41	Cudham, Kent	Chalk	Kerney and Carreck 1954	Undated
42	Keston, Kent	Chalk	Kerney and Carreck 1954	Undated
43	Oxted, Surrey	Chalk	Kerney 1963, p.219	Undated
44	Caterham Valley, Surrey	Chalk	Dines *et al.* 1933	Undated
45	Fairlight Glen, East Sussex	Ashdown Sands overlying Fairlight Clay	Moore 1974 and 1975	Contains Neolithic to Iron Age material
46	Kiln Combe, East Sussex	Chalk	This thesis Chapter 4	Beaker period to fifteenth century A.D.
47	Cow Gap, East Sussex	Chalk	Kerney 1963, p.221 This thesis Plate IX	Beaker sherd at base
48	Snells Pit, East Sussex	Chalk	This thesis Chapter 5	Prehistoric sherds
49	Asham, East Sussex	Chalk	Williams 1971 This thesis Chapter 5	Iron Age and Roman sherds from upper levels
50	Itford Bottom, East Sussex	Chalk	This thesis Chapter 5	Colluviation initiated by secondary clearance c.1770 ± 120bc (BM-1545) Bronze Age to Roman artifacts

No.	Name	Bedrock	References	Date and details
51	Balsdean, East Sussex	Chalk	White 1924, p.91 Norris and Hockings 1953	Bronze Age artifacts
52	East Saltdean, East Sussex	Chalk	Bell, M. unpublished work	Romano-British sherds
53	Pyecombe, East Sussex	Chalk	White 1924, p.91	Undated
54	Old Shoreham, West Sussex	Chalk	White 1924, p.91	Undated
55	Upwaltham, West Sussex	Chalk	Bradley 1967	Undated
56	Rake Bottom, Hampshire	Chalk	Small 1958 Shakesby 1975 p.16 Gordon and Shakesby 1973	Undated
57	Bascomb A, Hampshire	Chalk	This thesis Chapter 6	Medieval and later
58	Chalton B, Hampshire	Chalk	This thesis Chapter 6	Bronze Age to recent artifacts
59	Owlesbury, Hampshire	Chalk	Collis 1968 Evans 1967, p.240	Iron Age artifacts
60	Newhaven, East Sussex	Loess and clay loam with flints over chalk	Bell 1976	Medieval

Appendix 2.

Type list of artifacts.

Introduction. This list was originally drawn up for the first valley excavation, it was then added to during subsequent valley investigations. Consequently the order in which types are listed is not always strictly logical. Where numbers are missing they have not yet been allocated to types. The type numbers in this list are those used in the excavation archive (the original records and artifact card indexes) which is stored with the artifacts in the appropriate Museum.

The attribution of pottery sherds to the same fabric does not mean to imply that they were produced at the same centre or, necessarily, at the same date. This is especially true when the sherds were found in different valley trenches. Predominant inclusions are the basic criteria on which the fabric groups are based, particularly in the case of prehistoric sherds. The purpose of the fabric classification is to provide a way in which all the sherds, including undiagnostic pieces, can be divided up. These groupings can then be related, on the basis of fabric and diagnostic sherds, to nearby stratified assemblages.

1 - 9, Debris from flint knapping.

1 Core

2 Hammerstone

3 - 7 Flint flakes

10 Non-artifactual piece (misidentified in the field)

11-50, Flint tools.

11 End scraper

12 Side scraper

13	Thumb-nail scraper
14	Hollow end scraper
15	Notched piece
16	Barbed-and-tanged arrowhead
17	Hollow side scraper
18	Awl
19	Denticulate
20	Naturally backed knife
21	Burin
22	Leaf-shaped piece
23	Blade segment/possible sickle segment
24	Backed knife
25	Spurred flake
27	Flake from core tool
28	Pick
29	Fabricator
30	Knife
31	Transverse arrowhead
32	Serrated piece
33	Triangular knife
47	Other retouched piece
48	Possible retouched piece
49	Utilised piece
50	Possible utilised piece

51 - 60 Prehistoric pottery with a predominant filler of flint.

51	Soapy wares with calcined flint inclusions
52	Sandy wares with calcined flint inclusions

61 - 70 Prehistoric pottery with a predominant filler of shell.

61 Shell filled wares

62 Shell filled wares with iron oxide sand grains

71 - 80 Prehistoric pottery with a predominant filler of sand.

71 Sandy flint tempered fine wares

72 Sandy ware containing iron oxides and calcined flint inclusions

73 Black sandy burnished wares

74 Haematite ware

75 Sandy ware with calcined flint and vegetable inclusions

76 Fine sandy burnished wares

78 Sandy ware with fine flint

81 - 90 Prehistoric pottery with a predominant filler of grog.

81 Soapy grog filled sherds with a few small calcined flint grits

82 Sandy ware with grog

91 - 108 Romano-British fabrics.

91 East Sussex Ware

92 Samian Ware

93 Late Roman colour-coated ware, ? Oxford Ware

94 Sandy ware

95 Fine, flesh coloured grey ware, possibly Gallo-Belgic

96 Large sandy hand-made storage jars

97 ? Pevensey Ware

98 New Forest Ware

99 Rowlands Castle Ware

109 - 130 Anglo-Saxon, Medieval and Post-Medieval fabrics.

109 ? Scratch marked ware

110 Portchester Ware

111 Black wares with quartz sand

112 Sandy wares with multi-coloured flint grits

112a Sandy wares with multi-coloured flint grits, shell and grog

113 Fine sandy wares often with green glaze

114 Lead glazed earthenware: Sussex Ware

115 Post-Medieval earthenware

115a Surrey/Hampshire white earthenware

116 Sandy wheel thrown Medieval wares

94/116 Sandy wares of Roman or Medieval date

117 White Staffordshire China

118 Soapy green glazed ware

119 Medieval tile

120 Lead glazed Staffordshire earthenware

121 Salt glazed stone ware

122 Post-Medieval ware with pink body and green glaze

123 Victorian white glazed marmalade jar

126 Late Medieval earthenware

127 Surrey green glazed earthenware

128 Sandy wares ? Wickham Common

129 Micaceous sandy ware with grog filler

130 Late Medieval micaceous sandy ware

<u>131 - 140 Metal objects.</u>

131 Iron object of twentieth century date

132 Bomb fragment

133 Iron nail

133a Horseshoe nail

134 Gold

135 Bronze

136 Iron object of uncertain date and function

137 Lead shot

138 Roman hob nail

141 - 150 Charcoals, carbonised and other plant remains.

141 Charcoal

142 Carbonised grain

150 Woody roots

151 - 205 Geological and building materials, Mollusca and other objects.

151 Slate

152 Shelly limestone

153 Belemnite

154 Sarsen

155 Lower Greensand

155a Upper Greensand

156 Large '*Paludina*' limestone

157 Ironstone

158 Coke and coal

159 Fossil

160 Alkaline slag from blast furnace

161 Daub

161a Vitrified clay

162 Post-Medieval brick and tile

163 Wood

164 Smithing slag

165 Iron pyrite

166 Sandstone

167 Firecracked flint

168 Tile, possibly Roman

168/119 Roman or Medieval tile

169 Neidermendig/Mayen lava

170 *Ostrea* sp.

171 *Mytilus edulis*

172 *Venerupis* sp.

173 Anomiidae family

174 *Littorina littorea*

175 *Carastoderma edule*

176 *Cardium* sp.

177 *Pomatias elegans*

178 *Helicella itala*

179 *Helix aspersa*

180 *Cepaea* sp.

181 Bones and teeth

182 Bone button

183 Modern glass

184 Plastic comb

185 Modern bullet

186 Clay pipe

188 Green glass, Medieval or early Post-Medieval

189 Asbestos

190 Granite road chipping

191 *Buccinum undatum*

192 *Patella vulgata*

200 Ferruginous sandstone

201 Siliceous pebble

202 Quartzite sandstone

203 Kimmeridge shale

204 Limestone

205 Shale/mudstone

Appendix 3.

The following is a list of diagnostic sherds by fabric type from the trench in Kiln Combe. Where a group of sherd numbers are within brackets they are so similar in fabric and decorative motif that they probably derive from the same vessel, though they do not join.

Decorated pottery of the Beaker period - Fabric 81 (Figs. 17-19).

Horizontal bands of 3 or 4 lines of comb impressions separated by undecorated zones of 10cm. and more: (2708; 2905; 2748; 2883; 2737).

Double horizontal bands of comb impressions separated by vertical comb impressions: (2738 - plain vertical rim; 2795).

Horizontal rows of comb impressions separated by fingernail impressions: (3158; 3025; 3086; 3027; 3167).

Other sherds with comb impressions and fingernail decoration: 1655; 3063.

Flat base with horizontal combing: 2682.

Other comb impressed sherds: 13; 27; 2553; 2574; 2694; 2729; 2733; 2773; 2775; 2777; 2789; 2797; 2815a; 2844; 3075; 3115.

Circular impressed stamps: 3010, plain vertical rim; 357.

Fingernail impressions: 356; 2824a; 2829.

Flat bases ornamented with finger pinching: (2658; 2889); 2890.

Other finger pinched sherds: 385; 392; 1615; 3247.

Wide flaring rim from urn with two rows of internal cording: 2200.

Flat base: 389.

Carinated vessel, Neolithic or early Bronze Age: 2767.

Plain rim from large bowl: 2337.

Plain rim from small cup: 3006.

<u>Prehistoric pottery with flint filler - Fabrics 51-60.</u>

Plain vertical rim with fingernail impressions: 2478.

Everted rim from shouldered jar with pie-crust decoration : 3097.

Everted rims: 2341; 2732.

Sherd from shouldered jar: 3011.

Sherd with incised line: 647.

Sherd with finger smoothed surface: 2519.

Sherd with ?rusticated surface: 1110.

<u>Prehistoric pottery with shell filler - Fabric 61.</u>

Plain vertical rim: 1330.

<u>Sandy fabric with flint and vegetable inclusions - Fabric 75.</u>

No diagnostic sherds.

Iron Age Fabrics.

<u>Fine flint gritted ware - Fabric 71.</u>

Rims from carinated bowls: 2902; 3051.

Sherd with linear decoration: 3001.

<u>Sandy ware with iron oxide and flint inclusions - Fabric 72.</u>

Everted rim from ? carinated bowl: 342.

Plain rim sherd: 2559.

Rim sherd from straight sided vessel: 963.

Sherd with curvilinear decorations: 3272.

Romano-British Fabrics.

I am grateful to Mr. C. M. Green for suggesting the date ranges of these diagnostic sherds.

<u>East Sussex Ware - Fabric 91.</u>

Neck of vessel with two incised lines, first or second century A.D. type: 1700.

A base of the first century A.D.: 1407.

A base: 1802.

A lid: 173.

Other rim sherds: 1265; 1868; 2074.

Samian Ware - Fabric 92

Sherd 705.

Oxford Ware - Fabric 93.

? sherd: 1465.

Sandy Ware - Fabric 94.

Flagon with a slipped surface dated to the first and second century A.D: 69.

Batch marked grey sandy ware of third to fourth centuries: 1298.

Everted rim: 63.

Pevensey Ware - Fabric 97.

Sherd: 1477.

Medieval Fabrics.

I am grateful to Mr. D. Freke for discussing some of the diagnostic sherds with me.

Sandy ware with multi-coloured flint grits - Fabric 112.

Applied clay strips with finger impressions which occur locally between the late Saxon period and the late fourteenth century: 55; 128; 194; 202; 410; 540; 576; 613; 877; 1408; 1436; 2980a.

Flat topped rims, common from the thirteenth century: 74; 135; 137; 189; 218; 222; 241; 278; 420; 478; 479; 506; 541; 936; 1010; 1372; 1377; 1388; 1449; 1531; 3271.

Other Medieval rims: 150; 188; 214; 445; 455; 457; 584; 663; 681; 708; 777; 817; 864; 870; 890; 905; 918; 1022; 1138; 1144; 1394; 1504; 1509; 1530; 1548; 1554; 1561; 1681; 1759; 1762; 1778.

Sagging bases, common until the fifteenth century: 14; 70; 91; 209; 434; 577; 631; 646; 656; 674; 792; 798; 818; 820; 840; 902; 935; 970b; 1015; 1028; 1145; 1261; 1565; 1831; 3275.

Flat bases: 85; 486; 730; 1524; 1566.

Glazed sherd of twelfth to fourteenth century date: 449.

Glazed sherd of thirteenth to fourteenth century date: 838.

Other glazed sherds: 145; 159.

Handle: 655.

Sherd with incised lines: 1447.

Sherd from a carination: 1461.

Fine sandy ware often with green glaze - Fabric 113.

Green glaze of thirteenth to fourteenth century type: 523.

Green glaze similar to fourteenth century material at Seaford: 456.

Top of jug: 570; 610; 722; 871.

Green glazed sherds of fourteenth or fifteenth century date: 405; 493, 618; 815; 1537.

Green glazed sherds of fifteenth century type: 200; 695; 749; 782; 1478.

Stabbed jug handle with green glaze of fourteenth century type: 132;

Green glazed sherd of French or Surrey origin: 1119.

Other green glazed sherd: 207.

Thumbed base of fourteenth century jug: 732.

Undecorated sherd in fifteenth century fabric: 824.

Combed sherd of fourteenth to fifteenth century: 246.

Vertical rim with two incised lines: 501.

Flat topped rim: 139.

Other rim: 882.

Flat base: 490.

Late Medieval earthenware - Fabric 126.

Body sherd of fifteenth to sixteenth century date: 46.

?Surrey green glazed wares - Fabric 127.

Two sherds probably from the same chafing dish: 1359; 1489.

Medieval oven tile - Type 119.

1218; 216.

Appendix 4.

List of diagnostic sherds by fabric type from Itford Bottom, Trench B. Where a group of sherd numbers are within brackets they are so similar in fabric and decorative motif that they probably derive from the same vessel, though they do not join.

Bronze Age Fabrics.

I am grateful to Dr. Ann Ellison for discussing the diagnostic sherds with me.

Soapy grog filled sherds with a few calcined flint grits - Fabric 81.

Sherds decorated with a row of light fingernail impressions: (1672; 1647).

Faint traces of fingernail decoration: 1741; 1771.

Everted flat-topped rim with internal bevel: 1714.

Rather eroded sherd with traces of ?rusticated surface: 679.

Soapy wares with calcined flint grits - Fabric 51.

Plain vertical rim sherds: 1203; 2090.

A thin plain everted rim sherd: 1290.

Plain rim with fingernail impressions along the top: 1282.

An anomalous sherd, possibly part of a collar or lug: 1539.

Unperforated lugs: 1109; 1794.

Sandy wares with calcined flint inclusions - Fabric 52.

Plain vertical rims: 935; 304; 2181; 1226.

Angular shoulder from a jar: 402.

Bar handle of oval cross-section: 1169.

Sherds decorated with combed lines: 1274; 1011; 1245.

Sandy ware containing iron oxide and calcined flint inclusions Fabric 72.

Sherds from vessel with everted rim and fingernail decoration on the body: (2109; 280; 187).

Iron Age Fabrics.

I am grateful to Miss Sue Hamilton for discussing these sherds with me.

Shell filled wares - Fabric 61.

Plain rim from a small bowl: 1768.

Shell filled wares with iron oxide and sand grains - Fabric 62.

No diagnostic sherds.

Sandy flint tempered 'fine wares' - Fabric 71.

Sherds from angular shouldered jars: 2194; 1012; 950.

Sherd from a footring base: 2183.

Black, sandy, burnished wares - Fabric 73.

Footring base: 385.

Pedestal base: 2037.

Body sherds from angular shouldered jars: 819; 1406; 2095.

Rim from angular bowl: 1271.

Plain vertical rims: 2193; 2116; 176.

Rim of 'saucepan pot' type: 362.

Vessel with finernail impressions round the carination: 35.

Haematite ware - Fabric 74.

Single body sherd with distinctive brown surface coat: 1280.

Romano-British Fabrics.

I am grateful to Mr. C. M. Green for discussing these sherds with me.

East Sussex Ware - Fabric 91.

Everted rims from jars of first and second century A.D. date: 174; 419; 1989; 2119; 520; 396.

Everted rim: 272.

Straight rim from 'dog dish' type vessel of the first and second centuries A.D.: 282.

Base sherd: 1884.

Body sherds with 'eyebrow decoration' indicating a date at the very end of the Iron Age or the first century A.D. : 502; 488.

Lattice decoration, generally found in the first century A.D.: 457.

Samian ware - Fabric 92.

Body sherds probably second century in date and of Central Gaulish manufacture: 232; 2015.

Late Roman colour-coated ware ?Oxford Ware - Fabric 93.

Rim and body sherds from colour-coated vessel of fourth century type: (290 - rim; body sherds probably from same vessel: 159; 381; 365; 164; 173; 185).

Sandy ware - Fabric 94.

Rim of a grey ware barbotine beaker of a type generally dated between the later Flavian and Antonine periods: 344.

Rim of first century beaker or jar: 1995.

Fine flesh coloured/grey ware ?Gallo-Belgic - Fabric 95.

Body sherd possibly part of a Gallo-Belgic pipe clay Cam. 161 flagon, first or second century A.D.;183.

Black wares containing quartz sand - Fabric 111.

No diagnostic sherds.

Medieval and Post-Medieval Fabrics.

I am grateful to Mr. D. Freke for his comments on some of the diagnostic sherds.

Sandy wares with multi-coloured flint grits - Fabric 112.

None of the sherds is strictly speaking diagnostic but Mr. Freke has suggested the following dates on the basis of the coarseness of the filler:

Body sherd, early Medieval or Saxo-Norman: 379.

Body sherds of twelfth to fourteenth century type: 448; 292.

Body sherd, Medieval : 536.

Sandy ware with green glaze - Fabric 113.

Body sherd with green-brown glaze on a decoration of incised curved lines dating to the late Medieval or early Post-Medieval period: 276.

Sussex Ware - Fabric 114.

Body sherd from a large glazed earthenware bowl of probable nineteenth century date: 82.

Post-Medieval earthenware - Fabric 115.

Rim sherd of earthenware vessel: 198.

Appendix 5.

List of diagnostic sherds by fabric type from Chalton, Trench B. Where a group of sherd numbers are within brackets they are so similar in fabric and decorative motif that they probably derive from the same vessel, though they do not join.

Prehistoric Fabrics.

I am grateful to Professor B. W. Cunliffe for discussing these diagnostic sherds with me.

Soapy wares with calcined flint inclusions - Fabric 51.

Rim sherd with linear decoration, identified by Dr. I. Longworth as later Neolithic Peterborough Ware, probably Mortlake type: 3043.

Everted rim: 2588.

Flat base: 1499.

Body sherd with ? finger forming on surface: 1238.

Body sherd with combed surface: 1118.

Flat base: 3217.

Soapy grog filled sherds with a few calcined flint grits - Fabric 81.

No diagnostic sherds.

Sandy wares with coarse calcined flint inclusions- Fabric 52.

Body sherd with finger nail impression or signs of finger pulling: 3180.

Crudely formed, out-turned rim of a small vessel: 1074.

Rim with fingernail impressions, vessel widens out below a vertical neck: 1031.

Plain vertical rims from bowls: 1047; 800; 873.

Body sherd with incised line: 2729.

Simple rounded rim from a broad shouldered vessel with constricted neck: 1896.

Sandy ware with calcined flint and vegetable inclusions - Fabric 75.

No diagnostic sherds.

Fine sandy burnished ware - Fabric 76.

Simple rim from a constricted mouthed wide bellied jar: 1346.

Footring base: 726.

Body sherd from carination: 1557b.

Sandy wares with fine calcined flint inclusions - Fabric 78.

Rounded shoulder from jar: 3166.

Body sherd from rounded shoulder of a jar: 2498.

Sandy ware with grog - Fabric 82.

Flat base: 2578.

Romano-British Fabrics.

I am grateful to Mr. C. M. Green for discussing these sherds with me.

Samian Ware - Fabric 92.

Bowl from ? Central Gaulish form, second century A.D.: 1091.

Sandy Wares - Fabric 94.

Everted rim: 3114.

Rim of small bowl of first or second century A.D. date: 2432.

Rim of bowl of probable Flavian date: 3032.

Sherd from base of neck of large jar: 3074.

Body sherd from first or second century flagon: 1350.

Large sandy hand-made storage jars - Fabric 96.

Body sherds with finger drag marks: 3027; 3038.

Rowlands Castle Ware - Fabric 99.

Everted rims probably of first to second century date: 1781; 3088.

Base: 2938.

Rim of jar of 'batch-mark' type (Fishbourne type 313-Cunliffe 1971): 818.

Saxon and Medieval Pottery.

I am grateful to Professor B.W. Cunliffe for his comments on Fabrics 110 and 112 and Mr. Anthony Streeten for discussing the remainder of the Medieval diagnostic sherds with me.

Portchester Ware - Fabric 110.

Body sherd with deep square-toothed rouletting within rilled grooves on the surface of the vessel (Cunliffe 1976-Type 1b): 584.

Rim sherd with traces of deep rilling: 6 (undrawn section); 569: 3033.

Rim sherd of Portchester Ware type: 2928.

Body sherds in similar fabrics: 552; 2965.

? Scratch Marked Ware - Fabric 109.

Body sherd covered in fine linear scratch marks: 690.

Sandy Medieval fabric with flint inclusions - Fabric 112.

Sagging bases: 946; 493.

Flat base: 88.

Sherd from below neck of large jar, possibly twelfth century: 276.

Body sherd with green glazed surface: 556; 940.

Flat-topped rim: 587.

Rim sherds of bowls and cooking pots: 1736; 2771; 555; 2534.

Everted rim: 2796; 1266.

Body sherd with two incised lines: 1380.

Sandy ware with flint and shell - Fabric 112a.

No diagnostic sherds.

Shell filled wares - Fabric 61.

Flat base: 2190.

Body sherd from shoulder: 2969.

Sandy Medieval wares - Fabric 116.

Glazed body sherds: 438; 462; 2525; 1243; 221; 209; 1921; 366; 2626; 561; 554; 518; 880; 792; 760; 915; 950; 1414; 1271; 1630; 1282; 494; 1759; 138; 2689; 2826; 2711; 349; 1228; 2807; 448; 455b; 401a; 496; 2982; 2764; 382; 578; 1277; 629; 2665; 577; 384.

Sagging base with glaze: 475; 1097.

Body sherds with incised horizontal line and glaze: 2687; 1630.

Body sherd of jug with finger impressions round neck and glaze: 2820.

Slashed jug handle with glaze: 2119.

Thumbed jug base with glaze: 1809.

Thumbed jug base: 2345.

Sagging base: 340; 117.

Body sherd with thumb impressions: 2200.

Pricked strap handle from jug: 748.

Rims of bowls: 2355; 253; 401b; 283; 2604; 1039; 1274; 309; 788; 3104; 570.

Everted rim from large jar: 359.

Rim of jar: 1; 1513; 2548; 2713.

Rims: 1623; 3; 2759; 2517; 1930.

Sandy wares of Romano-British or Medieval date - Fabric 94/116.

Flat base: 1001 (opposite section).

Sandy ? Wickham Common Wares - Fabric 128.

Glazed body sherd: 2620; 2913; 968; 500.

Green glaze over surface combing: 159.

Flat base with glaze: 592.

Neck of glazed jug with ridged surface: 1300 (in 10-30m. section).

Sandy micaeceous ware with grog - Fabric 129.

Glazed body sherds: 395; 1413; 83; 109; 398; 255; 2646; 406.

Neck of jug with traces of green glaze: 1075.

Well fired sandy micaceous ware - Fabric 130.

Rim sherd with traces of green glaze: 2691.

Post-Medieval Pottery.

I am grateful to Mr. Oliver Pearcey for his comments on this material.

Lead glazed earthenware 'Sussex Ware' - Fabric 114.

Lead glazed body sherds: 32; 2115; 133; 139; 420; 227; 413; 806; 1050; 1615; 1642; 1811; 2036; 2085; 2089; 2108; 2208; 2258; 2269; 2304; 2319; 2349; 2357; 2360 (opposite section); 2410; 2530.

Rim with lead glaze: 1983.

Unglazed earthenware - Fabric 115.

No diagnostic sherds.

Surrey/Hampshire earthenware - Fabric 115a.

Body sherd with pale yellow glaze: 202.

White Staffordshire China - Fabric 117.

Glazed body sherds: 2062; 2017; 2241; 1482; 2262; 2263; 2281; 2338; 2341.

Glazed rim: 1652.

White china with a line of green underglaze painting: 2293.

White china plate rim with black painted line, late nineteenth to early twentieth century: 1998.

White moulded china, blue painted edges, mid-nineteenth century: 2371.

Transfer printed plate: (147; 2026; 719; 2274).

Transfer printed willow pattern plate post 1850: (89; 2102; 1996; 2283).

Lead glazed Staffordshire earthenware - Fabric 120.

Glazed body sherd, ? teapot: 678.

Salt glazed Stoneware - Fabric 121.

Glazed body sherd: 248.

Clay tobacco pipes - Type 186.

Based on comments by Mr. D. R. Atkinson.

Decorated bowl of the second half of the eighteenth or the nineteenth centuries: 1517.

Bowl decorated with leaves on the mould line, country product of mid-nineteenth century: 2107.

Bowl base with square spur carrying initials H/T, made by Henry Taplin II, Chichester, date c. 1800-1820: 2155.

Stem with part of incuse moulded inscription Russel and Gates/ Portchester, a partnership which was in operation between 1855 and 1859: 2255.

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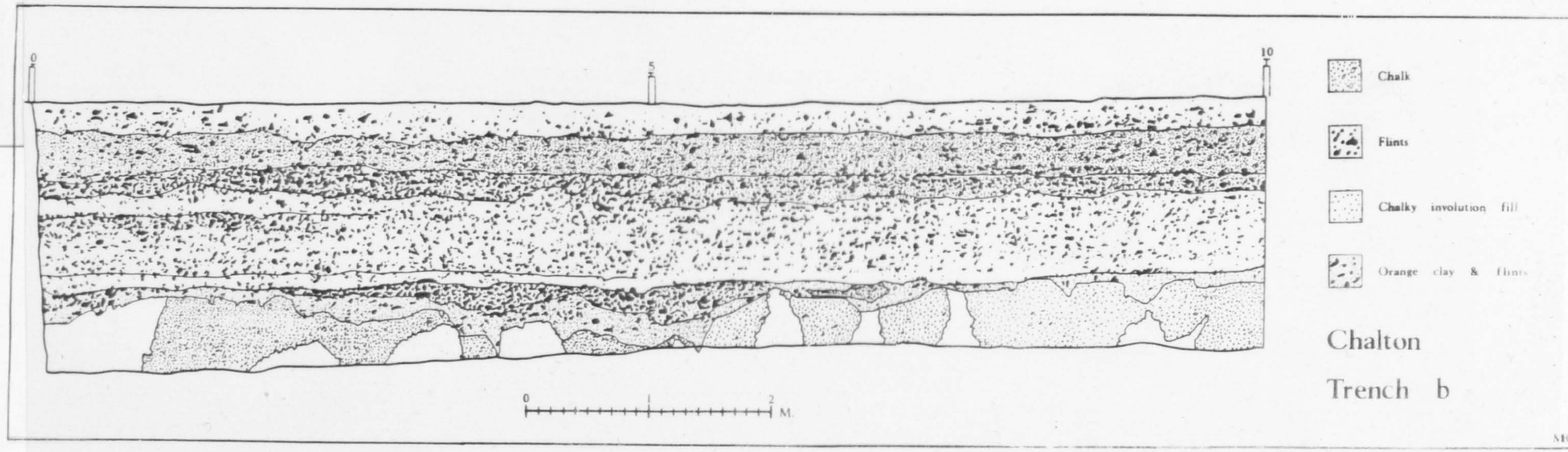

Fig.72. Chalton, Trench b. Transparent sheet showing the stratigraphy in the hand excavated portion of the trench as an overlay for the distribution drawings.